ol { P 1099
P 1102

The Journal of the
American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 14 CHICAGO, ILLINOIS OCTOBER 6, 1934

THE ETIOLOGY OF LYMPHOBLASTOMA

CHAIRMAN'S ADDRESS*

ARTHUR U. DESJARDINS, M.D.
ROCHESTER, MINN.

It may seem presumptuous for a mere radiologist to venture into the field of clinical medicine. The clinician's idea of a radiologist sometimes is that of a queer being who inhabits dark places, sees curious things, and talks a strange language compounded of wavelengths designated by Greek letters that remind one of college fraternities, of roentgens, and of the relative radiosensitiveness of different varieties of cells. It so happens that, when they undertook to acquire the extra knowledge essential for the sound practice of radiology, some radiologists were perverse enough to retain an interest in clinical medicine. I happen to be one of them. It is perhaps unfortunate that a larger proportion of those who have adopted this specialty have not seen fit to follow this example.

In my own case, the circumstances of life have given me an exceptional opportunity to see and to examine a large number of patients with lymphoblastoma, and, being mildly curious by nature, I have not been able to avoid taking what might be regarded as a morbid interest in this form of physical morbidity. During the past fourteen years, I have been called on to examine and to treat between 500 and 600 patients suffering from Hodgkin's disease or lymphosarcoma, and such an experience, naturally, could hardly fail to give rise to thoughts and queries that would not be likely to arise under different circumstances.

The precise character of the pathologic conditions collectively designated by the term lymphoblastoma still eludes the physician. Although these conditions have been the object of extensive study, pathologists still are far from agreement on the essential and differential characteristics of Hodgkin's disease and lymphosarcoma. Some regard these conditions as essentially malignant and as different phases of the same process, while others insist that Hodgkin's disease is an entity quite distinct from lymphosarcoma. Suffice it to say that, among pathologists, confusion reigns and will probably continue to reign for some time. As far as the leukemias are concerned, divergences of opinion still exist, but these relate mainly to details.

To judge by present-day writings, the etiologic factors responsible for Hodgkin's disease and lymphosarcoma are still as vague and uncertain as they have been for years. At different times in the past the idea that these conditions might have an infectious basis has been advanced. At one time it was held that these usually fatal disturbances of the lymphoid structures were due to an antecedent tuberculous infection; this idea probably emanated from the observation of undoubted lymphoblastoma occurring in patients who previously had been known to suffer from some tuberculous lesion. Later, other writers attempted to incriminate different micro-organisms which, having been found in lymphoid tissue affected by lymphoblastoma, were regarded as specific etiologic agents. Unfortunately for the protagonists of the etiologic significance of this or that variety of bacteria, their observations or conclusions have not been supported by subsequent investigations, and it now appears established that lymphoblastoma is not invariably due to any one micro-organism.

Extended observation of a large number of cases has led me to note certain features which, from the standpoint of etiology, have struck me as inescapably significant. So much so, indeed, that in my own mind the etiology of lymphoblastoma no longer seems uncertain.

First of all it is essential to consider the immediate cause. On two previous occasions I [1] have intimated that the factor immediately responsible for lymphoblastomatous hyperplasia of the lymphoid structures is chronic infection of any kind. This may be tuberculous, pyogenic or even syphilitic; in fact, the variety of infection is of little consequence, provided the infectious element has been present for a sufficiently long time. The duration of infection may vary considerably in different patients. If the history of the patient's physical ailments is carefully and persistently inquired into, evidence of infection of long standing will be obtained in the majority of cases. However, if the historical inquiry is to yield the desired information it must be pursued with method. In this particular, indeed, it is because of lack of method that so many physicians in the past have failed to elicit clues strongly suggestive of a clear relationship between chronic infection and lymphoblastoma.

For example, after the patient has described the sequence of events connected with his present illness, it is not sufficient to ask the stereotyped question "What other illnesses have you had?" Usually this question would receive an unhesitatingly negative answer. By the average patient such a question is taken to mean what other serious, incapacitating or bed-impelling illness he may have had. While being careful to avoid suggestive or leading interrogations, one should explain to the patient that the medical inquirer is interested not

* From the Section on Therapeutic Radiology, the Mayo Clinic.
Read before the Section on Radiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. Desjardins, A. U.: Radiotherapy for Hodgkin's Disease and Lymphosarcoma, J. A. M. A. **99**: 1231-1235 (Oct. 8) 1932; Roentgen Therapy in Mock, H. E.; Pemberton, Ralph, and Coulter, J. S.: Principles and Practice of Physical Therapy, Hagerstown, Md., W. F. Prior Company, 1932, volume 3, chapter 6, p. 40.

so much in illnesses that may have forced the patient to interrupt his activities and go to bed as in less severe and more prosaic and annoying disturbances. After this explanation, the following questions should be asked: During the past ten years, or at any time in your life, have you had trouble with your teeth? As a child, or since, have you been subject to sore throat or tonsillitis? Have you had any trouble from sinusitis? Have you had repeated earache? Have you had frequent bronchial colds? The interrogation should be continued systematically so as to elicit information concerning the gallbladder and other parts of the gastro-intestinal and genito-urinary tracts. If the questioning is well done and if the wording of the questions is adjusted to the intelligence and social status of the patient, evidence of chronic infection will be obtained in a large proportion of patients.

Still more significant, however, the chronic infection invariably has affected a part of the body drained by the group of lymph nodes that first gave indications of lymphoblastomatous hyperplasia. If information to indicate this is not obtained, the questioning should be resumed, because such inconsistency points to a lapse in the chain of evidence. The practically constant association of infection and primary lymphadenopathy in the same region and on the same side of the body can hardly be regarded as a coincidence. If this were a result of chance, the anatomic relationship would not be so consistent. Quite naturally, one at first is tempted to think that, since so few relatively healthy persons have not had some form of infection at some time during their lives, the assumption that lymphoblastoma depends on infection should be accurate in approximately half of the cases. Actually, the frequency of such relationship in related regions is so much greater than this that the conclusion of an etiologic relationship is inescapable.

But a definite and unquestionable history of chronic infection in a region drained by the nodes first affected with lymphoblastoma cannot always be obtained. Failure in this respect is especially prone to occur in dealing with any of three groups of patients: patients who are farmers or laborers and who, being obliged to work hard and steadily to maintain the family, give little attention to comparatively minor ailments and continue their labors when others would be inclined to seek relief; patients of limited intelligence, and patients whose initial or only manifestations of lymphoblastoma have been confined to the abdomen. Unless fairly pronounced, infection of abdominal structures, such as cholecystitis, ureteritis or pyelonephritis, may not attract the attention of the patient. Chronic gonorrheal or pyogenic infection of the prostate gland or oviducts may lead to secondary lymphadenitis and lymphoblastoma in the retroperitoneal, para-aortic nodes, without the patient being aware of what is going on. Many men may for years have had chronic bronchitis which they have attributed to smoking, and this assumption may have been entirely warranted; but the bronchitis, whatever may have been its cause, may also lead to lymphoblastoma, first in the mediastinal nodes but later spreading to groups of nodes in other parts of the body.

Besides the groups mentioned, a clear history of chronic infection cannot be obtained from a small proportion of other, quite intelligent, patients, probably because the factor of infection has been obscure.

In a small proportion of cases (less than 10 per cent) also more or less clear indications of an antecedent tuberculous process may be noted, but in the majority of patients tuberculosis does not appear to play an etiologic part.

Chronic infection of any kind, therefore, appears to be the immediate cause of Hodgkin's disease and lymphosarcoma, as it probably is also of the various forms of leukemia. But even if this etiologic relationship is undeniable, a predisposing factor also is required to provide a suitable background for the immediate cause. Otherwise, how could one account for the fact that so many persons may harbor chronic infection for months or years and never suffer from lymphoblastoma? This additional and essential element is probably to be found in a hereditary predisposition or tendency, transmitted from generation to generation, of the lymphoid tissue to react in a certain way to various noxious influences. Since each human being is bound to inherit tissues that, from the cellular, physiologic and pathologic points of view, are a composite of the tissues of his ancestors, it is logical to assume that if, among the patient's immediate or remote progenitors, there has been a tendency to disturbances of the lymphoid system, such a tendency is almost certain to reappear among the descendants. Moreover, evidence to substantiate this assumption is not lacking. As an example, the tendency to adenoid and tonsillar hyperplasia among the children of certain families is well known. Among patients suffering from lymphoblastoma it is not a rare experience to encounter the disease affecting two or more members of a family. Instances of this kind have been reported from time to time and, in my own experience of more than 500 cases, several patients have told me of brothers, sisters or other relatives who had succumbed to the same disease. Within one month I saw a young woman with Hodgkin's disease, who, when I asked why she was so exceptionally concerned about her condition, admitted that only six years before her only brother had died of the same thing.

In order to illustrate the frequency with which the theme of chronic infection appears in cases of Hodgkin's disease and lymphosarcoma, I take the liberty of giving briefly a few reports of cases encountered within a limited period. Were space available, the number of such cases could be increased ad infinitum.

CASE 1.—A man, aged 32, first had noticed enlargement of the left inguinal nodes in July 1933, of the left axillary and right inguinal nodes two weeks later, and of the right cervical nodes still one month later. When the patient was questioned, he revealed that he had contracted syphilis (chancre) three years previously and had had left inguinal adenitis at the time. He also stated that he had had chronic appendicitis (the appendix had been removed in 1927, without relief), and this was followed by "stomach trouble." The first impression was that the rather general lymphadenopathy might be syphilitic. Microscopic examination of sections of a node removed from the neck gave evidence of "chronic inflammation." Roentgen irradiation of all enlarged nodes was followed by such rapid regression that the clinical assumption of syphilitic lymphadenopathy had to be discarded in favor of lymphoblastoma on a syphilitic background.

CASE 2.—A man, aged 47, had noticed enlargement of the right tonsil in 1930. The tonsil had been removed in July 1930, and enlarged cervical lymph nodes on the right side of neck had been removed elsewhere in November 1930. Since 1907 he had had repeated infections of the throat. In February 1933 he had had an attack of severe pain in the midthoracic region; the pain had extended to the left shoulder and had continued for two days. Since then he had been short of breath. In March 1933 the patient had had a second attack of pain around

the left shoulder and left side of the abdomen. He had been unable to take a full meal because of pain in the epigastrium.

On examination, a large, nodular mass was found in the upper part of the abdomen, on the left side. Microscopic examination of sections of a cervical node, previously removed elsewhere, gave evidence of Hodgkin's disease.

CASE 3.—A man, aged 37, had had influenza, with marked nasopharyngeal inflammation, in October 1932. Shortly afterward, the right postauricular nodes had swelled. He had contracted influenza a second time in the spring of 1933. The left postauricular and cervical nodes on both sides had enlarged, and the hyperplastic enlargement had continued. In July 1933 the mediastinal nodes had enlarged. Roentgen irradiation had been followed by typical lymphoblastomatous regression, with rapid but temporary improvement. Since then the disease had been kept under control by occasional irradiation.

CASE 4.—A girl, aged 15 years, had been aware for six weeks of enlarged left cervical nodes, and for three weeks of enlarged right cervical nodes. The lymphadenopathy had continued to increase and, on examination, the mediastinal and retroperitoneal nodes also were found to be enlarged. Biopsy gave evidence of Hodgkin's disease. Further inquiry into the patient's physical antecedents revealed that, between the ages of 4 and 9 years, she had had repeated attacks of tonsillitis. The tonsils had not been removed.

CASE 5.—A man, aged 40, three months before he came to the clinic first had become aware of an enlarged left axillary node, the diameter of which had increased to about 9 cm. Microscopic examination of the excised mass of left axillary nodes gave evidence of lymphosarcoma. Shortly thereafter the left axillary, then the right axillary and inguinal, nodes also became enlarged. Although the patient himself was not conscious of abdominal lymphadenopathy, he complained that for some time he had been distressed by increasing constipation, which had disappeared after roentgen irradiation of the abdomen. The enlarged nodes in other regions also had retrogressed. On further inquiry it was found that for some years the patient had suffered from dental sepsis and from biliary disturbances, which had been regarded as manifestations of cholecystitis. In this case the sequence of events and the low grade of intelligence of the patient made it impossible to determine clearly whether the lymphoblastoma had originated in the cervical or in the abdominal nodes. Chronic infection had been present in both regions.

CASE 6.—A woman, aged 44, had become aware, about July 1933, of general pruritus, and lymph nodes on the left side of neck had become enlarged. Apparently thinking that these symptoms were related to the menopause, a physician had prescribed ovarian extract for two months. The face and neck rapidly had become puffy, and dyspnea had developed. Later the skin and subcutaneous tissues over the left breast and anterior aspect of the thorax had become infiltrated. Examination disclosed marked bilateral enlargement of the cervical lymph nodes, with engorgement of the superficial veins of the face and neck; moderate enlargement of the axillary nodes on both sides; mediastinal lymphadenopathy with moderate, bilateral hydrothorax; marked cutaneous and subcutaneous infiltration of the left breast and anterior part of the thorax, with distended and tortuous veins; and enlarged retroperitoneal nodes, with general pruritus (excoriations from scratching).

Inquiry revealed that the woman had had extensive dental infection for some time prior to the onset of her illness and that seven teeth had been extracted on this account in May 1933. The remainder of the infected teeth were to be extracted later.

CASE 7.—A woman, aged 56, for at least two years had been aware of enlarged submaxillary and cervical nodes and later of enlarged axillary and inguinal nodes. The lymphadenopathy had begun on the left side of the neck. The mediastinal and other regions were found free from enlarged nodes, as far as could be determined. The left tonsil was abnormally large, extended almost to the median line of the pharynx, and had been large for a long time. Some of the lower teeth on the left side harbored chronic infection.

CASE 8.—A girl, aged 8 years, during the winter of 1932-1933 had had three attacks of tonsillitis, and two additional bouts of tonsillar infection had occurred in September and October 1933. The last attack had continued for about two weeks. Instead of returning to normal size, as did the tonsil on the left side, the right tonsil had continued to enlarge. A biopsy in January 1934 disclosed severe inflammation akin to that which accompanies Vincent's infection. By this time the lymphoid hyperplasia had extended to the right cervical nodes, which, in the upper part of the neck on the right side, now formed a mass measuring 5 by 3 cm. The right tonsil had been removed elsewhere, but in spite of this the right cervical lymphadenopathy steadily had increased until in April 1934 a mass measuring approximately 15 by 10 cm. had been found. Under treatment by roentgen rays the size of the mass diminished 50 per cent in four days and completely disappeared during the ensuing two weeks. The child's general condition improved correspondingly. Then she began to complain of abdominal discomfort and her respiration became visibly embarrassed. Both the abdominal pain and dyspnea increased rapidly and, when she was examined one week later, a large, firm mass could be palpated in the lower part of the abdomen; besides this, roentgenographic examination revealed mediastinal lymphadenopathy. It is evident that the disease is extending rapidly, as it so often does in children.

CASE 9.—Late in December 1932 or early in January 1933 a woman, aged 37, had become conscious of pain around the right hip, and the pain had extended down the right thigh and leg. She also had had a sense of pressure in the back (lumbar region) and around the rectum. The pain around the right hip had been accompanied by urticaria. A gynecologist whom she had consulted had inserted a pessary, which she still wore when she came to the clinic but from which she did not derive any relief. Another physician had injected varicose veins at the anterior part of the right thigh, also without relief. During the latter part of January 1933 a third physician had found a mass in the epigastrium, and exploratory laparotomy had been advised. At operation (elsewhere) a mass infiltrating the upper part of the mesentery, and inoperable, had been found; microscopic examination of sections from this mass gave evidence of lymphosarcoma.

Review of the woman's medical antecedents disclosed that in 1925 and 1926 she had had repeated attacks of right ureterolithiasis and had continued to suffer from this afterward. At one time during this period she had been in bed for three months. Repeatedly she had been subjected to cystoscopic examination. In September 1926 a stone had been removed surgically from the right ureter. In 1927 a diagnosis of right pyelonephritis had been made by an eminent urologist.

CASE 10.—In 1922 a woman, aged 57, had had repeated attacks of severe, colicky pain (which she described as "worse than labor pains") in the upper right quadrant of the abdomen. The pain had extended across the abdomen and through to the back. These attacks had recurred about every ten days for two or three months and had not been accompanied by jaundice. The most severe attack had lasted about an hour but, on the average, the other attacks had not extended much beyond thirty minutes. When these attacks had subsided, soreness and tenderness of the anterior abdominal wall had persisted for some time. In the ensuing two years she had had only mild attacks, lasting from fifteen to twenty minutes. The painful seizures had been associated with gaseous distention and bloating. In 1924 she had had a series of similar attacks for a period of about three months. After this the abdominal disturbance had smoldered until February 1933, when pain in the upper left abdominal quadrant, associated with an almost continuous pain in the epigastric region, had developed. Also the patient had recently become conscious of a large, firm mass in the upper left abdominal quadrant.

Palpation of the abdomen disclosed a hard, movable mass occupying the epigastric and left hypochondriac regions. In June 1933 an exploratory laparotomy was performed; the surgeon found a neoplasm involving the entire posterior wall and greater curvature of the stomach, with numerous enlarged retroperitoneal lymph nodes extending along the lesser curvature, upward to the esophagus. Microscopic examination of a piece of tissue from the wall of the stomach gave evidence of lymphosarcoma.

Case 11.—A woman, aged 66, had noticed in November 1932 a slightly enlarged node on the right side of the neck. In January 1933 she had had a severe infection of the respiratory tract, with much cough and expectoration of mucopurulent material and had continued to cough since that time. Since the end of 1932 also the lymph nodes in the neck, especially on the right side, had progressively enlarged. A biopsy on a node from the right side of the neck gave evidence of Hodgkin's disease. Questioning brought forth the information that, for many years, the patient had suffered from pyorrhea, and twenty-seven teeth had been extracted for this reason in the summer of 1932.

Case 12.—In the early fall of 1932 a man, aged 42, had begun to suffer from "heartburn" and gastro-intestinal distress, which had come on one or two hours after meals. The symptoms gradually had increased, his weight had unaccountably begun to diminish, and these gastro-intestinal disturbances had been accompanied by belching and increasing constipation. In March 1933 the patient had been ill with influenzal pneumonia for three weeks; during this period he had had a high fever and, even after the infection had subsided, he had not fully recovered his health. Between the onset of his first symptoms in the fall of 1932 and his registration at the Mayo Clinic in July 1933 his weight had diminished from 230 to 167 pounds (from 104 to 76 Kg.). During the month preceding his examination, dyspnea had developed and he had passed tarry stools. Examination disclosed a large, irregular mass in the upper left quadrant of the abdomen, and bilateral enlargement of the mediastinal lymph nodes. Under roentgen irradiation the markedly enlarged abdominal and mediastinal nodes rapidly diminished in size, and all the patient's symptoms abated as promptly. Further investigation disclosed that the patient had suffered from marked pyorrhea for years.

In this case it seems likely that, by feeding infectious material to the gastro-intestinal tract over a long period, the pyorrhea probably had initiated the lymphoblastomatous process in the abdominal nodes, and later it had extended upward to the mediastinal nodes.

If chronic infection as the immediate cause of lymphoblastoma is as significant as it appears to be, it behooves the physician actively to combat infection wherever it may appear and, by every means in his power, to prevent such infection from becoming endemic, so to speak. Patients should not be allowed to harbor indefinitely teeth, tonsils, a gallbladder or other structures that are known to be infected. The importance of this conclusion is all the greater when the ancestors of the patient have been known to suffer from lymphoid disturbances. But, since few patients possess definite and reliable knowledge about the cause of death of even their parents and relatives of the first degree, certainly their knowledge of the morbid tendencies of distant relatives must be even more limited and less dependable. Under these circumstances the duty of the physician is plain.

The Deficiency Diseases.—One of the most notable contributions that has been made to medicine during the last quarter of a century is the discovery of the accessory food factors, the vitamins. With a comprehension of the significance of the vitamins has come an increasing interest in the subject of malnutrition in its broadest sense. As a result of innumerable investigations the tendency has grown within recent years to gather into one group a number of disease states that have been defined somewhat loosely as the deficiency diseases. The deficiency which is common to all of them is an inadequate amount of some substance in the food which is necessary to the body for its proper nutrition, or the inability of the body to absorb, or to prepare for absorption, these necessary substances even though the diet contains sufficient quantities of them.—Longcope, W. T.: The Importance of Disturbances in Nutrition in Edematous States, *New England J. Med.* **210**:1243 (June 14) 1934.

PULSATING EXOPHTHALMOS DUE TO INTERNAL CAROTID-JUGULAR ANEURYSM

THE USE OF THORIUM DIOXIDE SOL IN LOCALIZATION

T. L. TERRY, M.D.
AND
PHILIP MYSEL, M.D.
BOSTON

Pulsating exophthalmos is usually the result of an abnormal arteriovenous communication in or just behind the orbit.[1] The pressure in the vein or in the venous sinus is raised so that it approaches the pressure in the artery. As a result, all anastomoses of these vessels and their capillary beds are greatly altered. Reid[2] states that abnormal arteriovenous communications give the greatest stimulus to establishment of collateral circulation. There is an actual increase in the number of capillaries, and all anastomoses to surrounding channels are increased in size. The veins are distended into varicosities (fig. 1).

This, of course, holds true especially in the orbit, since the orbital veins connect with both the external and the internal jugular vein. The increase in volume of the orbital content is produced by the increased volume of blood in the vascular bed and by the edema resulting from the distention of vessels. Arterial pulsation is also carried over into the veins and is transmitted to the eye. Pulsation of the eye is not always obvious and it is sometimes necessary to apply pressure to the globe in order to elicit the pulsation.[3]

Usually the paired venous sinuses of the skull communicate freely with one another and with tributaries to the external jugular veins. The important communications are between the cavernous sinuses by means of the anterior and the posterior intercavernous sinuses; between the straight sinus, usually on the left, and the transverse sinus, usually on the right, by the "confluens sinuum"; between the jugular bulbs by the occipital sinuses, and between the intracranial sinuses and the tributaries of the external jugular vein by emissary veins, by the pterygoid plexus, and indirectly by the angular vein (fig. 2). Thus the increased venous pressure caused by an arteriovenous aneurysm between the internal carotid artery and the internal jugular vein should be well distributed to all the venous sinuses of the skull, through them to the opposite internal jugular vein and to both external jugulars.[4]

With such a widespread distribution of the back pressure one would not usually expect to find enough effect on the cavernous sinus of the same side to produce a pulsating exophthalmos. The superior sagittal sinus usually terminates by emptying into the right transverse sinus, but it may empty into the left trans-

From the Massachusetts Eye and Ear Infirmary and Harvard University Medical School.

Read before the Section on Ophthalmology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. de Schweinitz, G. E. and Holloway, T. B.: Pulsating Exophthalmos, Philadelphia, W. B. Saunders Company, 1908.
2. Reid, M. R.: Studies on Abnormal Arteriovenous Communications, Acquired and Congenital: Report of Series of Cases, Arch. Surg. **10**: 601 (March) 1925; Abnormal Arteriovenous Communications, Acquired and Congenital: Origin and Nature of Arteriovenous Aneurysms, ibid. **10**: 996 (May) 1925; Abnormal Arteriovenous Communications Acquired and Congenital Effects of Abnormal Arteriovenous Communications, ibid. **11**: 25 (July) 1925; Abnormal Arteriovenous Communications, Acquired and Congenital: Treatment of Abnormal Arteriovenous Communications, ibid. **11**: 237 (Aug.) 1925; Am. J. Surg. **14**: 17 (Oct.) 1931.
3. Wheeler, J. M.: Pulsating Exophthalmos, Atlantic M. J. **31**: 812 (Aug.) 1928.
4. Cunningham, D. J.: Textbook of Anatomy, ed. 5, New York, William Wood & Co., 1923, pp. 964-977.

verse sinus or it may even bifurcate and empty into both transverse sinuses. Edwards [5] has found marked variations in the outgoing venous sinuses of the skull. De Schweinitz and Holloway [1] found that pulsating exophthalmos became bilateral in seven of the sixty-nine cases they analyzed. They say: "Following the venous distention on one side, there is an extension of the process by the transverse and the circular sinus to the venous channels of the opposite side. There is not a simultaneous development of pulsating exophthalmos in the two eyes." An unusually wide communication between the paired sinuses is a logical explanation for these cases that become bilateral.

So far as we can ascertain, the following is the only reported case of pulsating exophthalmos due to an arteriovenous aneurysm in the neck:

REPORT OF CASE

History.—A man, aged 38, awakened at 3 a. m. with a sharp pain in the right temporal region. Ten grains (0.65 Gm.) of acetylsalicylic acid gave no relief. The patient continued his work as a hod carrier for some three days, when the discomfort became so unbearable that he sought relief from his physician. Local applications of heat and some pills were given him. The patient was relieved by the treatment sufficiently to resume his work. However, about three weeks later he noticed a "swishing" sound in his right ear, which was regular but which became more rapid with increased activity. He became dizzy after exertion. He also noted some vertical diplopia, which soon disappeared. The dizziness and the murmur became so intense that the patient could not work. He came to the eye clinic of the Massachusetts Eye and Ear Infirmary four weeks after the onset of his symptoms.

The patient was hit on the vertex of the head with an ax about twenty years previously. Several stitches had to be taken to close the wound. The injury did not render the patient unconscious and he had an uneventful recovery. The patient reported to us that he was hit on the right temporal region by a piece of falling timber about two months before. He considered this accident just a "scratch" and of no significance.

Examination.—There was a small but definite exophthalmos of the right eye. The difference in prominence of the two eyes was 4 mm. as measured by the Hertel exophthalmometer. Careful inspection showed a pulsation of the eye. The pulsation was approximately synchronous with the radial pulse. The superficial veins on the right side of the neck were prominent.

A loud murmur of a shrill musical type, seemingly continuous but greatly accentuated during systole, was heard over the right eye, in the right temporal region and over the internal carotid artery in the neck. It was loudest in the upper part of the neck. A compression of the carotid artery low in the neck immediately stopped the murmur but had no visible effect on the exophthalmos.

Diplopia was not present. The vision in each eye was 20/20. There was 1.5 prism diopters of right hyperphoria. The visual fields and blind spots were normal.

The conjunctival vessels of the right eye were increased in size and were very tortuous. This was particularly evident temporally. In the right fundus the retinal veins were moderately dilated and somewhat more tortuous than usual, though the departure from normal was not striking. The retinal arteries appeared normal in size and distribution. There were no retinal hemorrhages and no signs of retinal edema. The left fundus was quite normal. The pupillary responses were normal in both eyes.

X-ray films of the skull showed no increased density in the orbit. Both optic canals were normal in size and shape. There was no evidence of fracture.

The Wassermann reaction was negative. Neurologic and medical examinations at the Massachusetts General Hospital were essentially negative.

The facts that the exophthalmos was of such a small amount that the murmur was heard loudest in the neck and that the superficial cervical veins were prominent were opposed to the assumption that the aneurysm was located in or just behind the orbit. It was thought best to determine, if possible, the location of the aneurysm in order to devise the best method of surgical approach.

The internal carotid artery was cut down on and 25 cc. of thorium dioxide sol was injected into the artery. A series of x-ray films was taken at intervals during and after injections. They showed a somewhat triangular shadow with its base approximately at the site of the injection. The base was wide enough to represent the total width of the internal carotid artery and the internal jugular vein. The apex of the triangle was just below the jugular bulb (fig. 3). None of the thorium entered the skull. There had been very little leakage of the thorium into the soft tissues of the neck. This was shown by an x-ray film taken after sufficient time had elapsed for the thorium in the vessels to be carried off and diluted by the circulation (fig. 4). This roentgenographic evidence was proof that an abnormal arteriovenous fistula existed between the internal carotid artery and the internal jugular vein in the upper part of the neck.

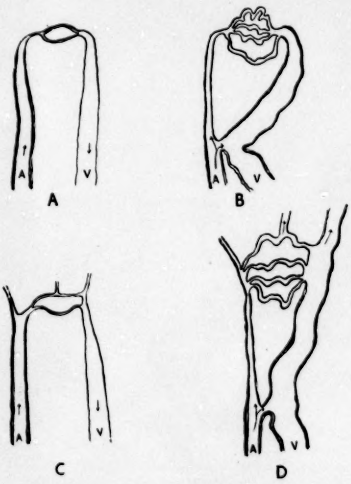


Fig. 1.—Schematic representation of the circulatory changes in arteriovenous aneurysms: *A*, a simple vascular bed of artery, vein and capillaries. *B*, effect of the aneurysm in a simple vascular bed, with decrease in size and thickness of the wall of the artery peripheral to the aneurysm, thickened wall and dilatation of the vein both peripherally and centrally, and increase in size and in number of the capillaries. *C*, normal vascular bed with anastomoses of arteries, veins and capillaries with vessels of neighboring vascular beds. *D*, aneurysm in the vascular bed; the changes mentioned in *B* are present and in addition the anastomoses to neighboring vascular beds take part in the pathologic changes; in other words, the collateral circulation has been greatly increased.

Operation (described by Dr. Mysel).—Ten days after the thorium dioxide sol had been injected, the patient was taken to the operating room and the wound was reopened under general anesthesia. The internal jugular vein was dissected free and on picking up the vein with forceps one could see whirlpools and eddies of arterial blood within the vein. The jugular and lingual veins were ligated between two ligatures, the common facial vein having been ligated at the time of the injection of the thorium.

The region of the bifurcation and the internal carotid artery for 1¼ inches above the bifurcation were found to be infiltrated and boggy, evidently because of the injection of the thorium. For this reason, and also to prevent the back "swish" from the external carotid, the common carotid was ligated first. The incision was then carried farther up the neck and the internal carotid artery was exposed well above the part infiltrated by the thorium and was ligated at this point.

5. Edwards, E. A.: Anatomic Variations of the Cranial Venous Sinuses, Arch. Neurol. & Psychiat. **26**: 801 (Oct.) 1931.

The following day the pulsation of the eyeball, the constant tinnitus, the temporal headache, and the bruit over the eyeball and neck had disappeared.

The patient remained in the throat service for two weeks following the carotid and jugular ligations. During this period he complained of slight vertigo only in the morning, when getting out of bed; otherwise his convalescence was uneventful, no cerebral complication developing.

Postoperative Course.—Two days after the operation the intern in the throat service found the right fundus to be pale. Seventeen days after operation the fundus showed a marked pallor but the retinal veins were markedly distended. There was no cherry red spot in the macula. The pallor of the retina was considered to be due to edema. Near the macula were several small somewhat irregular whitish spots, which were considered to be exudate. The vision was reduced to fingers at 4 feet. The confrontation fields were normal. The dizziness on exertion had diminished. Twenty-one days after the operation no changes were observed in the eye. Forty-nine days after the operation the retinal pallor had almost completely disappeared. The vision had improved to 20/70. Five months after the operation the dizziness on exertion had entirely disappeared. The vision was still 20/70. The retinal pallor and the whitish spots had entirely disappeared. There was an irregular indistinct dark spot in the fovea. The venous distention in the retina had disappeared. The exophthalmos was still present.

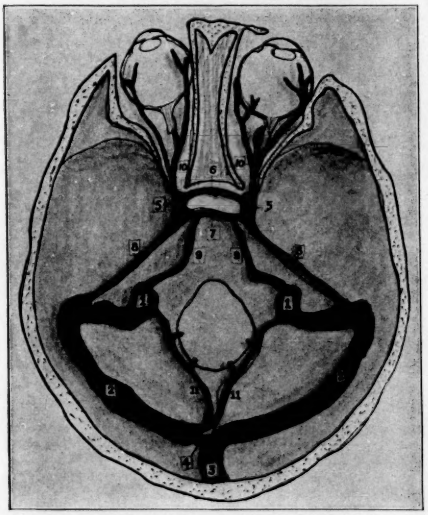


Fig. 2.—Composite drawing made by aid of illustrations in Cunningham's Textbook of Anatomy and Spalteholz's Human Anatomy. This shows the venous sinuses of the skull and their usual communications. 1, jugular bulb; 2, transverse sinus; 3, superior sagittal sinus; 4, confluent sinus; 5, cavernous sinus; 6 and 7, anterior and posterior intercavernous sinuses; 8 and 9, superior and inferior petrosal sinuses; 10, ophthalmic vein; 11, occipital sinus. No attempt has been made to show the connections between the tributaries of the internal and external jugular veins. A very important connection is between the ophthalmic vein and the angular vein. The latter, though it is a tributary to the internal jugular vein, has a large connection with the external jugular vein. Very small or absent connections between the paired venous sinuses of the skull at 6 and 7 and at 4 could easily account for a pulsating exophthalmos as a result of an arteriovenous aneurysm between the internal carotid artery and the internal jugular vein.

In 1930 Radt [6] developed a technic of intravenous injection of thorium dioxide sol to visualize the spleen and liver. From 10 to 15 cc. of the drug is injected daily until the total dose of from 50 to 75 cc. has been given. In about four days the drug is taken up by the reticulo-endothelial system so that the liver and the spleen are visible as very dense organs in x-ray films. This drug is considered to be dangerous. It is toxic in large doses. It may possibly be radioactive. It is held in the reticulo-endothelial system for years. The Council on Pharmacy and Chemistry of the American Medical Association refused to approve it in 1932.[7] The report of the council lists the dangers of the drug and raises objections to the use of the term thorotrast (Hayden).

Allen and Camp [8] had used thorium dioxide sol to visualize arteries in the extremities. They found that a dose of 25 cc. was sufficient. This is not enough to give an x-ray shadow of the liver and spleen. Certainly such small doses should be of much less danger. Moniz [9] has used thorium dioxide sol to demonstrate the cerebral vessels. The drug has been used by many others for various purposes.

In 1920 Callander [10] collected nine cases of arteriovenous aneurysms between the internal jugular vein and the internal carotid artery. However, Winslow,[11] in a more recent review, collected 106 cases of extracranial aneurysms of the internal carotid artery. Of this number nineteen were of the arteriovenous type. Since Winslow's communication I have found in the literature three additional cases of fistula between the internal carotid and the jugular.[12] There is one case of arteriovenous aneurysm between the internal carotid artery and the jugular bulb.[13] There are five cases [14] of abnormal arteriovenous communication between the common carotid artery and the internal jugular vein. With the exception of the case of Worms and Germain,[12] in which there was a nonpulsating exophthalmos, none of these cases showed any ocular changes.

By far the most interesting paper on arteriovenous aneurysms is by Reid.[2] He found that the abnormal communications were congenital in six cases out of thirty-three. Reid considers cirsoid aneurysms and simple angiomas to be congenital abnormal arteriovenous communications.

Smith [13] discusses the embryologic basis for congenital arteriovenous aneurysms. In the embryo certain vessels may be arteries for a time and later become veins, and vice versa. He quotes Sabin as stating that the circulatory systems of pig embryos of from 14 to 15 mm. length may still show slender connections

6. Radt, Paul: Eine Methode zur röntgenologischen Kontrastdarstellung vom Melz und Leber, Klin. Wchnschr. **8**: 2128 (Nov. 12) 1929.

7. Thorotrast, Report of Council of Pharmacy and Chemistry, J. A. M. A. **99**: 2183 (Dec. 24) 1932.

8. Allen, E. V., and Camp, J. D.: Roentgenography of the Arteries of the Extremities, Proc. Staff Meet., Mayo Clin. **7**: 657 (Nov. 16) 1932.

9. Moniz, Egas: Cerebral Angiography with Thorotrast, Arch. Neurol. & Psychiat. **29**: 1318 (June) 1933.

10. Callander, C. L.: Study of Arteriovenous Fistula with an Analysis of 447 Cases, Ann. Surg. **71**: 428 (April) 1920.

11. Winslow, Nathan: Extracranial Aneurysm of Internal Carotid Artery, Arch. Surg. **13**: 689 (Nov.) 1926.

12. Worms and Germain: Exophthalmie non pulsantile due à un aneurysme carotido-jugulaire interne d'origine traumatique, Bull. Soc. d'opht. de Paris, December 1931, p. 761. McIntyre, D. R.: Arteriovenous Fistula of Left Internal Carotid Artery and Jugular Vein, J. A. M. A. **101**: 278 (July 22) 1933. Gallo, A. G., and Spota, B. B.: Arteriovenous Aneurysm Between the Internal Jugular Vein and Internal Carotid Artery with Radicular Paralysis, Prensa méd. argent. **17**: 604 (Sept. 20) 1930.

13. Smith, Ferris: Congenital Arteriovenous Fistula in Tympanum, Arch. Otolaryng. **10**: 32 (July) 1929.

14. Tcharugin, A. V.: Complete Absence of Left Internal Jugular Vein with Arteriovenous Aneurysm of the Common Carotid and the Right Internal Jugular Vein, Odessky M. J. **3**: 82 (Feb.) 1928. Usade, L. W.: Spontaneous Cure of an Arteriovenous Aneurysm Between the Common Carotid Artery and Internal Jugular Vein, Chirurg. **3**: 555 (June 15) 1931. Mooro, A. W.: A Case of Arteriovenous Aneurysm of the Neck, Lancet **2**: 1186 (Dec. 1) 1923. Knaggs, R. L.: Varicose Aneurysm with Spontaneous Cure, Brit. J. Surg. **8**: 167 (Oct.) 1920. Koltes, F. X.: Arteriovenous Aneurysm of Common Carotid Artery and Internal Jugular Vein, U. S. Nav. M. Bull. **25**: 630 (July) 1927.

between the middle segment of the internal jugular vein and the internal carotid artery.

Certainly no congenital basis is needed to explain the occurrence of an aneurysm following a perforating wound of an artery and a vein as a result of injury by a sharp cutting instrument, by gunshot wounds, or by spicules or sharp edges of a fractured bone. In those cases, on the other hand, that result from trauma in the nature of a contusion, most assuredly the presence of a diseased vessel wall would play a very important part in the formation of the aneurysm. This may explain to a great extent why aneurysms arise in only a few of the people who sustain practically identical contusions. Reid [2] reported cases in which trauma to a cirsoid aneurysm or even to an angioma produced enlargement and pulsation of the lesion.

COMMENT

It is impossible to be sure that the patient herein discussed did not have more than one arteriovenous communication. Such another fistula intracranially placed would produce the signs and symptoms and would have been cured probably by the same operative procedure. However, it is possible to explain all the conditions on the basis of one lesion.

It is difficult to surmise that an arteriovenous communication of the internal carotid artery and the internal jugular vein could produce pulsating exophthalmos unless there was a very poor or a completely absent communication between the paired sinuses. Edwards [6] has shown that many types of variations do occur in the venous sinuses of the skull. Probably a faulty communication between the paired sinuses could have been demonstrated in the present case by further injection of thorium dioxide sol on the left side, but the possible remote dangers arising from the accumulation of thorium in the system makes one hesitate to use such measures when no value to the patient would result.

Fig. 3.—Appearance immediately after the injection of thorium dioxide sol, which is in the artery and the vein. The arteriovenous fistula is located approximately at the apex of the triangular shadow produced by the thorium dioxide sol.

It is highly improbable that the severe injury to the head twenty years previously or the more recent slight head injury or the combination of the two produced the arteriovenous aneurysm in this patient. It seems that this aneurysm was spontaneous and most probably of congenital origin.

Reid [2] points out that there are marked changes in the peripheral parts when an abnormal arteriovenous communication is eliminated. The temperature of the part is elevated from 1 to 2 degrees. This is due to sudden changes of the circulatory condition. Some time must elapse before a normal equilibrium is reestablished.

Fig. 4.—Appearance a considerable time after the injection of thorium dioxide sol. The shadow in the neck shows the small amount of thorium dioxide sol that leaked into the soft tissues at the time of the injection.

Tying the carotid artery is a dangerous operation. If the patient does not die, there is the possibility of hemiplegia.[15] The danger is no doubt lessened by the fact that the aneurysm has increased the collateral circulation. Unless hemorrhage or cardiac symptoms make an early operation advisable, Reid [2] feels that it is preferable to wait six months before operating on the usual abnormal arteriovenous communication so that the collateral circulation may be fully established. However, in the case of pulsating exophthalmos he feels that an early operation is preferred because the vision may be endangered by increased protusion of the eye.

Tying the internal jugular vein also occasions some disturbance to the eye. It may produce papilledema, distention of the retinal veins, edema of the retina, and even retinal hemorrhages. Reid [2] feels that it is advisable to tie the accompanying vein when the artery is tied in cases of arteriovenous fistula. Failure to tie the vein leaves the region with an abnormally large venous drainage. Walcker [16] as well as other authors stresses the desirability of ligating the internal jugular vein whenever the carotid artery is tied.

In an attempt to understand the changes in the eye following the operation, several factors must be considered: Ligature of the carotid artery would tend to produce an anemia of the retina, ligature of the internal

15. Salinger, Samuel, and Pearlman, S. J.: Hemorrhage from Pharyngeal and Peritonsillar Abscesses, Arch. Otolaryng. **18**: 464 (Oct.) 1933.
16. Walcker, F.: Arch. f. klin. Chir. **130**: 736, 1924 (quoted by Salinger and Pearlman[15]).

jugular vein would tend to produce a passive congestion of the retina, and elimination of the aneurysm would tend to improve the circulation. A combination of these factors in their indeterminable proportions did produce an edema of the retina and a distention of the retinal veins. The cause of the irregular indistinct dark spot in the fovea is not clear. It might be due to a small choroidal hemorrhage, to proliferation of pigment epithelium of the retina or to the processes of repair following a small flat separation of the retina at this location. Though embolism of choroidal vessels is not generally recognized, it is possible that the operative trauma to the neck vessels might have freed a minute thrombus.

De Schweinitz and Holloway [1] state that "tumors of the brain which have broken into the orbit, as well as tumors of the orbit itself, or protruding into it from the neighboring sinuses, can cause symptoms which are analogous to those furnished by the typical pulsating exophthalmos." The differentiation is usually easily made by roentgenographic means and by the presence or absence of a murmur. However, there are other additional methods of differentiation. Brown [17] calls attention to Branham's sign [18] and to determination of the oxygen content of the venous blood. To determine the oxygen content of the venous blood Brown collects two samples, one from the vein near the fistula and the other from a vein somewhere else in the body. The samples have to be collected under oil. The Van Slyke gasometric method of analysis is done.

The question may arise as to whether the duration of an arteriovenous fistula can be determined. In a case of pulsating exophthalmos in my own practice this question arose, from a medicolegal point of view. Strong evidence for a long duration is furnished by the extent to which the heart has hypertrophied. The heart hypertrophies after a time; the effect on the heart has been compared to that of aortic regurgitation.

CONCLUSIONS

1. An abnormal arteriovenous communication between the internal carotid artery and the internal jugular vein rarely affects the eye.
2. Such an aneurysm produced pulsating exophthalmos in the case herein reported.
3. The exophthalmos probably was due to insufficient communication between the paired cranial sinuses.
4. Thorium dioxide sol is of aid in locating the site of arteriovenous aneurysm.

128 Newbury Street.

ABSTRACT OF DISCUSSION

DR. ADOLPH O. PFINGST, Louisville, Ky.: More than 600 cases have been reported since the condition was first described by Benjamin Travers in 1809. Travers was of the impression that his case was one of cirsoid aneurysm of the orbit. He was the first to ligate the common carotid artery for its relief. Autopsy established that many of the cases of pulsating exophthalmos are not of orbital but of intracranial origin and that most of them are brought about by arteriovenous communication. In 1907 de Schweinitz and Holloway, in their classic treatise on pulsating exophthalmos, pointed out that the majority of cases are due to communication between the internal carotid artery and the cavernous sinus. This is especially true of the traumatic cases, which represent about 77 per cent of all arteriovenous aneurysms. Of the spontaneous type of pulsating exophthalmos, only a little more than half the cases can be attributed to arteriovenous communication, the cause of the other half being about equally divided between orbital tumors and simple aneurysm, either of the internal carotid or of the ophthalmic artery. The author has stated that quite a few cases of exophthalmos have their cause in extracranial arteriovenous communication and that most of them due to fistulous communication between the internal carotid and the internal jugular in the neck are not associated with exophthalmos. His case represents the only one ever reported in which internal carotid-jugular aneurysm was associated with a pulsating exophthalmos. In the intracranial arteriovenous variety of aneurysm the pulsation of the eye can readily be explained by the fact that the anastomosis of the artery and vein brings about a rise of pressure in the vein and thus carries the arterial pulse to the vein of the eye. The increased volume of the orbital contents, the result of increase in blood throughout the orbital vessels, and the edema resulting from the distended vessels are also a potent factor in the transmission of the pulse beat to the eyeball. The interpretation of the cause of the pulse beat in their case by Drs. Terry and Mysel, that it was probably due to a poor communication between the paired cranial sinuses and a consequent disturbed collateral flow of blood, seems a theory worthy of consideration when one subscribes to the view that the rare cases of bilateral pulsating exophthalmos are due to a wide communication between the paired sinuses. The mechanism of the production of arteriovenous communications has not been satisfactorily explained.

DR. MONT R. REID, Cincinnati: The problem of dealing with intracranial or subcranial arteriovenous communications is complicated by the dangerous procedure of ligating a large artery proximal to the point or points of communication. The procedure is attended by much more serious complications than the ligation of an artery for arterial aneurysm. Ligations in the cases of intracranial arteriovenous communications lead to a high incidence of cerebral complications. To obviate the dangers of proximal ligation of an artery for pulsating exophthalmos, various methods have been tried. As pointed out by the author, the ligation of a vein to prevent too rapid shunting of blood back to the heart has been advocated. Brooks advocated opening the internal carotid artery and inserting an embolus of muscle, which would go up and block the fistula. De Schweinitz and others have cured many cases by ligating the large supra-orbital vein. Recently a small instrument has been developed consisting of a brush on a flexible probe, which can be inserted back toward the fistula, after division of the supra-orbital vein, in order to traumatize the intima of the vein. The cures reported by ligation of the supra-orbital vein have undoubtedly been due to a retrograde thrombosis. As pointed out by Dr. Terry, pulsating exophthalmos may result from abnormal extracranial arteriovenous communications. His case seems certainly to be of this type. It is most interesting that the condition apparently developed in his patient without any definite injury. One wonders whether the condition was not congenital or at least preceded by a long-standing deep angioma, which, as the result of some stress or strain, developed the characteristics of a cirsoid aneurysm exhibiting a thrill and bruit. The occurrence of just one spontaneous communication between large arteries is extremely rare, except in the case of thoracic aneurysms, which may rupture into the vena cava. If his case developed on the basis of an angioma or cirsoid aneurysm or is congenital, the chances are that the ligation of the carotid artery will serve only to ameliorate the condition and that the symptoms will recur. This was true in the case in which Halsted operated on a girl 11 years of age for an extracranial cirsoid aneurysm situated apparently in about the same position as in the case of Dr. Terry's patient. He ligated the external carotid artery and excised one rather large fistula. Seven years later she had the same symptoms associated with slight exophthalmos, bruit and thrill. At that time I excised a fistula and a very large ascending pharyngeal artery. This relieved the patient for a considerable period but then the bruit and thrill returned.

DR. T. L. TERRY, Boston: Though the case here reported was apparently cured of the pulsating exophthalmos, macular vision in the involved eye was lost. It might have been

17. Brown, G. E.: Abnormal Arteriovenous Communications Diagnosed from the Oxygen Content of the Blood of Regional Veins, Arch. Surg. **18**: 807 (March) 1929.

18. Branham's sign is the sharp slowing of the pulse with closure of the fistula.

possible to cure the aneurysm without loss of central vision if some other type of operation had been done. The operation as described was apparently the best substitute of operative means available when it was found impossible to perform a so-called quadrilateral ligature with removal of the arteriovenous fistula. Ligation of the veins as suggested by Dr. Reid might have been a more successful procedure. In a paper read last Monday before the Association for Research in Ophthalmology by Dr. George M. Dorrance it was shown that operative obstruction of the common carotid artery would reduce the circulation through the internal carotid artery by 50 per cent. Ligation of the superior thyroid artery along with the common carotid would reduce the flow in the internal carotid by 75 per cent. This operative procedure Dr. Dorrance finds is not nearly so apt to produce cerebral complications. The operation as suggested by Dr. Dorrance might also have cured the aneurysm in the case I have reported without destroying macular vision. Since meningocele extending into the orbit and angioma of the orbit can produce pulsating exophthalmos, it is important to use thorium dioxide and gasometric determination of the oxygen content of the blood from the internal jugular vein to prove conclusively that the pulsating exophthalmos is due to an arteriovenous fistula. However, the presence or absence of a murmur in the involved region would be of great importance in this differentiation.

FORENSIC APPLICATION OF SEROLOGIC INDIVIDUALITY TESTS

KARL LANDSTEINER, M.D.
NEW YORK

Serologic methods were applied in forensic medicine shortly after the discovery of immunologic species characteristics. The specific precipitin reaction made it possible to differentiate human from animal blood even in minute stains, a task beyond the reach of ordinary chemical methods. To go still further and attempt to distinguish bloods of various human individuals from one another seemed almost hopeless at that time. In part this problem was solved by the observation that there exist several types of human blood which can be identified by a very simple reaction, normal human serums being used as reagents.

I presume that the properties of the human blood groups are known well enough to make a repetition unnecessary. Because of the regularity of the blood group scheme it was obvious from the outset that the underlying blood properties are constitutional and, following the rediscovery of Mendel's laws by de Vries, Correns and Tschermak, these individual blood properties were shown to be hereditary and subject to the mendelian rules.[1] Accordingly, the blood group reactions can be resorted to forensically in cases of disputed parentage. I propose to discuss first this application of the blood group tests, which is more common than the differentiation of human blood stains.

Two major theories on the inheritance of the blood groups have been put forward. Since the theory of von Dungern and Hirschfeld, which seemed satisfactory at the outset, has been disproved, it will suffice to present the theory of Bernstein, now generally accepted. One should emphasize, however, that there was never any controversy about the facts most essential for the practical application of the tests and furthermore that with regard to these facts both theories are in agreement.

Read before the Section on Miscellaneous Topics, Session on Forensic Medicine, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. von Dungern and Hirschfeld, Ottenberg.

The theory of Bernstein assumes three allelomorphic genes, A, B and O (or R), one of which is present in each member of a certain pair of chromosomes, genes A and B being dominant over O. Since each somatic cell possesses two of these genes, one derived from either parent, there are six possible genotypes, whose correlation with the four blood groups is given in table 1. The mode of inheritance may be illustrated

TABLE 1.—*Correlation of Genotypes with Blood Groups*

Genotype	Group (Phenotype)
OO	O
AA, AO	A
BB, BO	B
AB	AB

by an example of a mating. Assuming one parent of the genotype AO and the other of the genotype BO, the germ cells of the former contain either the gene A or O and likewise the germ cells of the latter either B or O. Thus there result four possible genotypes in the offspring; namely, AB, AO, OB, OO. In this case, therefore, children of all four groups are possible.

In a like manner the offspring arising from any sort of mating can be derived (table 2). It is evident that the tests cannot be used to prove parentage; on the other hand, an exclusion of paternity can be made not infrequently. These cases fall under two headings. First, the dominant agglutinogens A and B cannot appear in the offspring unless they are present in one or both parents (table 2, lines 1-6); secondly, a parent O cannot have a child AB, and a parent AB cannot have a child of group O (table 2, lines 7-10). The first rule (dominance rule), is common to the two theories mentioned, whereas the second is peculiar to Bernstein's theory.

From the foregoing it follows that a decision as to nonpaternity can be made only in a certain percentage

TABLE 2.—*Derivation of Offspring*

Groups of Parents	Groups of Children	Exclusion Cases
O × O	O	A,B,AB
O × A	O, A	B,AB
O × B	O, B	A,AB
A × A	O, A	B,AB
A × B	O, A, B, AB	
B × B	O, B	A,AB
O × AB	A, B	O,AB
A × AB	A,B, AB	O
B × AB	A,B, AB	O
AB × AB	A,B, AB	O

of cases, since children of the same group can result from matings with men of different groups, and at any rate the falsely accused man and the true father may belong to the same group. The average chance of excluding paternity is about 1/7,[2] as can be calculated on the basis of the theory of inheritance from the frequencies of the four groups in the population. A point of practical interest is that the chances vary for men of different groups; the figures, as calculated by Hooker and Boyd, are, for group O, one in five; for group A, one in seventeen; for group B, one in seven; for group AB, one in two. Of course, if one knows the group of the child and of the mother, other figures are

2. Hooker, S. B., and Boyd, W. C.: J. Immunol. **16**: 451 (May) 1929. Wiener, A. S.: J. Immunol. **24**: 443 (June) 1933. For the population of Germany the figure is somewhat higher; namely, about 1/6.

obtained, and in certain combinations it becomes superfluous to examine the third individual; e. g., if the child and the mother both belong to group A.

In European courts the method has been used in affiliation cases for the past ten years. A summary of the medicolegal cases in which the test has been applied, published by Schiff [3] in 1929, is reproduced in table 3.

This compilation demonstrates the wide use of the tests and shows furthermore that the number of exclusions is remarkably high, namely 7.9 per cent, i. e., about half of the figure that would result if all men were falsely charged. Hence, as Schiff points out, "in those law suits in which the blood test has been applied, roughly every second man has been denounced unjustly."

TABLE 3.—*Medicolegal Cases*

	Number of Cases	Exclusions
Germany	4,519	353
Austria	700	63
Danzig	126	8
Denmark	50	6
Sweden	152	9
Norway, Switzerland, Lithuania	37	4
	5,584	443 = 7.9%

The large majority of decisions, theoretically from five sixths to six sevenths, depends on the dominance rule of A and B. The validity of this rule has been universally acknowledged by the medical profession and, after some hesitation, by the courts of many European countries, whose verdicts in affiliation cases rest for the most part solely on the blood tests. With regard to the question of absolute certainty it may be appropriate to compare this method of paternity exclusion by blood grouping with that of recognizing individuals by finger prints. Both procedures are borne out by a large body of empirical evidence, and not a single authentic case has been reported that would cast doubt on their reliability.

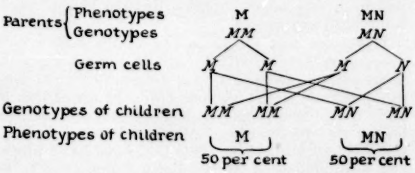
The second inheritance rule, the so-called Bernstein rule, pertaining especially to parents or children of group AB, is also supported by an impressively large number of observations; but, excluding doubtful reports there is at least one instance in which a mother of group AB gave birth to a child whose blood could not be distinguished from group O blood.[4] Although it is not improbable that a theoretical explanation for this exception can be given in accordance with Bernstein's theory (P. Levine, Thomsen), still with this case in view and adopting a conservative attitude, conclusions based on the Bernstein rule should for the present be regarded as highly probable but not as apodictic, at least in my opinion. However, even granting the existence of parent-child combinations O — AB or AB — O, their frequency must be extremely small, since no such combination has been observed in reliable, recent investigations comprising about 1,000 mothers of group AB and 6,000 of group O.[5]

It was first observed by von Dungern and Hirschfeld that group A (and AB) can be divided into two subgroups on account of differences in the property A. The theory put forth by Thomsen, Friedenreich and Worsaae on the inheritance of these subgroups seems to cover the facts quite satisfactorily, so that statements as to the possible offspring of parents belonging to a given subgroup can be made with a considerable degree of probability. Yet, technical difficulties are encountered in performing the tests which make further investigations necessary before full reliance can be placed on the method.

The view that there exist individual serologic properties other than those determining the blood groups has been advanced from time to time and some observations, e. g., reaction with agglutinins, occasionally but rarely occurring in human serum, have supported this opinion. However, a method yielding easily reproducible results was not available until recently.

When immune serums obtained by injecting rabbits with human blood were exhausted with certain bloods of a given group, it was found that some of the serums still agglutinated other bloods of the same group but not the blood used for the absorption. In this way, individual blood properties were demonstrated,[6] entirely independent of the blood groups, two of which, designated as M and N, were found to be applicable to the investigation of cases of disputed paternity.

The properties M and N define three types of human blood, namely, the types M, N and MN, depending on which of the agglutinogens are present. The frequencies of those types in the white population examined are approximately 30 per cent M, 20 per cent N and 50 per cent MN. Bloods lacking both agglutinogens have not been found. The explanation for the nonexistence of this sort of blood becomes evident from the mechanism of heredity. As proved by investigations on a large series of families, the agglutinogens M and N are genetically determined by two allelomorphic genes which can yield only the genotypes *MM*, *NN*, *MN*, corresponding to the three phenotypes named. For example, designating the genes for M and N again by the letters *M* and *N* respectively, in the mating M × MN the former parent possesses the pair of genes *MM*, the latter



Types of children of M and MN parents.

the pair *MN*. The parent of type M will therefore produce only one kind of germ cells, namely, those bearing the gene *M*, whereas the type MN parent will produce equal numbers of germ cells with the genes *M* or *N* respectively. From the various combinations of the germ cells it follows that half of the children will belong to type M and half to type MN, as in the accompanying diagram. By similar simple reasoning one obtains the type of children in all six matings possible, as given in table 4. Here again there are two exclusion rules. First, the properties M or N do not appear in children unless they are present in the blood of at least one parent and, secondly, a parent of type M cannot have a child of type N or vice versa.

3. Schiff, F.: Med. Welt **3**: 1213 (Aug. 24) 1929.
4. Haselhorst, G., and Lauer, A.: Ztschr. f. Konstitutionslehre **15**: 205, 1930.
5. Schiff,[3] Wiener, A. S.; Lederer, M., and Polayes, S. H.: J. Immunol. **18**: 201 (March) 1930.
6. Landsteiner, Karl, and Levine, Philip: J. Exper. Med. **47**: 757 (May) 1928; **48**: 731 (Nov.) 1928.

The results of family investigations carried out by several independent workers are summarized in table 5. As is seen from the table, the observed frequencies agree satisfactorily with the calculated values and there are only a few apparent exceptions to the theory, such as must be expected on account of illegitimacy. That this assumption is correct is supported by the fact that in seven of the eight cases the incompatibility certainly involves the father and not the mother. Most likely the same holds true for the remaining case.

A convincing argument is afforded by a study of the properties M and N in mothers and children. This test for the accuracy of the inheritance theory is based on the second rule, according to which incompatibility can be recognized when the type of only one parent is known. In fact, in the data thus far collected, including more than 6,000 children and their mothers, there is no case of a mother of type M having a child of type N or a mother N with a child M. Additional evidence was provided by the examination of twins, who, when identical, always agree with regard to the properties M and N and belong to the same blood group.

TABLE 4.—*Type of Children from Six Matings*

Types of Parents	Per Cent Children of Types		
	M	N	MN
M × M	100	0	0
N × N	0	100	0
M × N	0	0	100
M × MN	50	0	50
N × MN	0	50	50
MN × MN	25	25	50

Further confirmation was obtained by a statistical method similar to that which led Bernstein to his "three gene" theory of the heredity of the blood groups. If the relative frequencies of the genes *M* and *N* in a population are designated by the letters m and n, respectively, then, a priori, m + n = 100 per cent. Since type M, corresponding to genotype *MM*, possesses two genes *M*, its frequency in a homogeneous population is m^2. Hence $m = \sqrt{M}$, where M represents the observed frequency of type M in the population. Similarly, $n = \sqrt{N}$, so that $\sqrt{M} + \sqrt{N} = 100$ per cent.

In fact, in all trustworthy investigations on the distribution of the properties M and N in various populations it was found that, if one adds the square root of the frequency of the types M and N, the sum is approximately equal to 100 per cent. As a striking example, Schiff's figures obtained by the examination of 1,420 inhabitants of Berlin may be cited; namely: M 0.301, N 0.208; MN 0.49; in this case $\sqrt{M} + \sqrt{N} = \sqrt{0.301} + \sqrt{0.208} = 0.549 + 0.457 = 1.006$.

On the basis of the studies discussed, European authors concur in advocating the tests for M and N as evidence in affiliation cases, and these tests have actually been applied in Germany, Denmark and Sweden in several hundred lawsuits. The chances of excluding paternity are considerably increased by the use of this method, so that when, in addition to blood grouping, tests are made for M and N, one out of three wrongly accused men will be exonerated. Likewise, the chances for detecting interchange of new-born infants in hospitals are raised to about 70 per cent. It must be emphasized, however, that great caution should be employed in the performance and in the interpretation of the tests, particularly those for the property N, and that there are questions concerning the technic of these tests which still require thorough study in order to exclude possible mistakes.[7]

To turn now to the second forensic application of blood grouping, namely, the examination of blood stains,[8] it may be said that these tests, though not often required, prove to be of considerable consequence in certain criminal court proceedings. After having established by chemical tests that the stain contains blood and by means of the precipitin reaction that it is of human origin, one may use two methods, the examination for iso-agglutinins and that for agglutinogens. The test for agglutinins consists in adding a trace of the dried blood or a fragment of the stain or an extract of it to suspensions of bloods of the groups A and B. If possible, the tests should include the blood of the victim and the accused person. Precautions must be taken in order to avoid errors due chiefly to the presence of agglutinating substances other than iso-agglutinins or to pseudo-agglutination. For this reason control tests with blood of group O are essential.

As a rule, the iso-agglutinins are still active in dried blood after many months or even a longer interval, but they may deteriorate sooner and consequently no conclusions can be drawn from negative reactions. The iso-agglutinable substances of the cells are more resistant than the iso-agglutinins and may be demonstrable when the other method fails. After drying, the red cells cannot be used for agglutination tests; but they still are capable of combining with the corresponding agglutinins. Hence, if on adding serum of group A and of group B severally, or a mixture of both to the material to be examined, iso-agglutinins are absorbed, it is possible in this way to determine the group of the dried blood.

Cases that prove the value of the group diagnosis of blood stains have been reported by several authors, especially Lattes[9] and Popoff.[10] In some instances it was established that a blood stain found on the clothes or an implement of the suspected individual did not originate from the victim, whereupon the accused was discharged; in other cases the testimony offered by the defendant was shown to be false. It has been justly advised, therefore, by Merkel, that whenever an autopsy is made on the victim of an assault the blood group of the body should be determined for possible future use.

TABLE 5.—*Summary of the Studies of Landsteiner-Levine, Wiener-Vaisberg, Schiff, Thomsen, Clausen, Lattes, Blaurock and Crome*

Types of Parents	Number of Children of Types			
	M	N	MN	Totals
M × M	219	0	1	220
N × N	0	110	0	110
M × N	0	2	216	218
M × MN	330	3	376	709
N × MN	2	281	274	557
MN × MN	153	139	341	633
Totals	704	535	1,208	2,447

The reactions for M and N have thus far been utilized for the examination of blood stains in only a few legal cases,[11] but a more general application may be expected as the methods are improved.

7. Compare Koller: Ztschr. f. Rassenphysiol. **5**: 102, 1932.
8. Landsteiner and Richter (1902, 1903); Lattes.[9]
9. Lattes, L.: Deutsche Ztschr. f. d. ges. gerichtl. Med. **9**: 402 (March 10) 1927.
10. Popoff, N. W.: Deutsche Ztschr. f. d. ges. gerichtl. Med. **9**: 411 (March 10) 1927.
11. Lauer, A.: Deutsche Ztschr. f. d. ges. gerichtl. Med. **22**: 86 (Oct. 18) 1933.

An extension of the blood group tests was made possible when it was found by several authors that the properties A and B are detectable by suitable technic not only in blood and organs but also in secretions such as saliva, seminal fluid, mucus and sweat. Thus, in some cases the blood group could be determined in traces of seminal fluid and in the small quantity of dried saliva on the edge of an envelop or on cigaret stubs. On the other hand, the presence of group specific substances in secretions renders it necessary to take precautions in the examination of blood stains; that is, to test in addition to the stains other parts of the material not soiled by blood.

It is of interest that, depending on the presence or absence of group specific substances in urine and saliva, two types of individuals can be sharply distinguished, for these substances are practically lacking in the secretions of from 20 to 30 per cent of all individuals. Still more remarkably, the ability to secrete the group substances is inherited as a mendelian dominant.[12]

Attempts to demonstrate the agglutinogens M and N in secretions and organs have not been successful.

It is not practicable here to enter into the question of technic and in regard to this I must refer to the treatises and papers on the subject. Suffice it to say that particularly the tests for M and N and the examination of blood stains are of a delicate nature and require a worker with considerable experience and acquainted with the pertinent literature. As to the prospects of the forensic application of the blood tests in this country it will, of course, depend on whether the available evidence will satisfy the legal authorities as it has the European courts.

Rockefeller Institute for Medical Research.

ABSTRACT OF DISCUSSION

DR. ALEXANDER S. WIENER, Brooklyn: In my studies on the heredity of the agglutinogens of human blood, specimens of the blood of 1,334 mothers and their 1,462 children were examined for the properties A and B, and a series of 461 mothers with 495 children for the properties M and N. In addition, the simultaneous heredity of the four agglutinogens A, B, M and N was also studied in 131 complete families with 642 children. The results of these investigations have convinced me firmly of the reliability of the tests. The method cannot be applied in every case, since it exonerates only one out of three falsely accused men. Another opportunity for applying the method arises when two new-born infants are interchanged, as happened in a Chicago hospital in 1930. In this case the tangle was straightened out with the aid of the classic blood groups, since, whereas neither child's blood group matched, in accordance with the laws of heredity, with the blood groups of the parents to whom they had been assigned, the bloods matched satisfactorily when the children were exchanged. If only the four Landsteiner blood groups are tested for, the accused man has one chance in six or seven of establishing his innocence. The discovery by Landsteiner and Levine of the properties M and N and their mode of heredity is a very important advance, since it has doubled the number of cases in which a definite decision can be made. Perhaps the most convincing demonstration of the value of the blood grouping tests is afforded by the reaction of the mother when confronted with the results of the examination. Thus, in a case tried before the court of common pleas of New Haven, Conn., a woman accused a certain man of the paternity of her illegitimate child. I examined the blood of the individuals involved and found that the woman belonged to group O, the man to group A, and the child to group B, so that the accused man could not possibly have been the father of the child. When the mother was confronted with the results of the examination, she withdrew her charge and the man was acquitted. In many cases of disputed paternity, the use of blood grouping tests is in the child's interest. Thus, the husband may be appeased if the exclusion of the other man by these tests proves that his suspicions are unwarranted; or the accused man in a bastardy case may be induced to marry the mother of the child, if he is not excluded by the blood tests. An important legal question is whether the court has the power to order the individuals involved in a filiation case to submit to a blood test. Lee states that "in this country the right to have a physical examination includes the right to have a drop of blood where it is material." And in reply to the argument that the medical examination is a violation of the privilege of refusing to testify on the ground of self incrimination, Lee remarks, "What is required of the witness is not testimony but physical inspection, something in the nature of real evidence."

DR. KARL LANDSTEINER, New York: I want to emphasize once more the difficulty of the technic and the danger of faulty results, and especially that one should refrain from giving a definite opinion if the results of the tests are not clear cut.

12. Schiff, F., and Sasaki, H.: Klin. Wchnschr. 11:1426 (Aug. 20) 1932.

THE TONSILS, THEIR FUNCTION AND INDICATIONS FOR THEIR REMOVAL

L. W. DEAN, M.D.
ST. LOUIS

A study of the tonsil problem requires a consideration of all the lymphoid tissue in the pharynx. The palatine tonsils are, on a clinical basis, the most important of the lymphoid structures in the throat. However, the other lymphoid masses may be and usually are involved in throat infection. They must be given serious consideration if the influence on systemic disease of infection about the throat is to be eradicated. Certainly in removing the conditions about the throat that have a deleterious influence on such diseases as rheumatic fever, heart disease, Still's disease, chorea and hemorrhagic nephritis, it is impossible to get the most satisfactory result by confining the attention to the palatine tonsils or to these structures plus the pharyngeal tonsil. If in this class of cases following the removal of the pharyngeal and palatine tonsils the children suffer from acute exacerbations of their systemic disease, and if, as is usually the case, the acute exacerbations are preceded by acute upsets in the upper respiratory tract, one must realize that there is some condition about the throat, nasal sinuses or ears that is responsible for these acute disturbances of the upper respiratory tract.

It is a common thing for the pediatrician to say "When you removed the faucial and pharyngeal tonsils from this child with a heart lesion, you did not eradicate all the foci of infection because the child is suffering from acute upper respiratory upsets. Further, these attacks are having a deleterious effect on the heart."

In every case in which a tonsil is removed for the purpose of benefiting a systemic condition, my associates and I make a note in the chart to the effect that we have done what should meet the exigencies of the situation but that it is not certain that all chronic infection has been removed. Further, we request that the patient be returned for reexamination in the event that

From the Oscar Johnson Institute, Department of Otolaryngology, Washington University School of Medicine.

Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

the clinical course of the disease suggests that there is something left in the upper respiratory tract which has a deleterious influence on the patient.

It is usual for children to be returned for further study. They may be returned several times. We get the best results by adding our supervision to that of the pediatrician for from eighteen months to two years. It is only by this thorough cooperation that the best results can be secured. It is irritating sometimes to have the pediatrician insist that a condition has been left in the regions of the upper respiratory tract which if removed will benefit the child. My experience has been that his judgment was correct. The opinion of the internist or pediatrician is of greatest importance in deciding the type of operation, if any, that should be done on the lymphoid tissues of the throat.

The most important part of the treatment of heart disease, rheumatic fever, arthritis or chorea in children is the eradication of chronic infection about the upper respiratory tract. It is axiomatic that the lymphoid masses in the throat, other than the palatine and pharyngeal tonsils, may be infected and consequently must receive attention in the control of the infection about the throat. It is also true that one cannot possibly remove from the pharynx every vestige of infected lymphoid tissue, but much more can be done than the removal of the faucial and pharyngeal tonsils. The course of the systemic response is an important factor in determining how thorough one's work has been.

The tonsils and other lymphoid structures of the throat are not lymphatic glands. Neither is their structure the same as that of the lymphoid tissue of the spleen and bone. They are a part of the subepithelial lymphoid tissue of the body. The lymphoid structures of the pharynx are integral parts of the pharyngeal mucous membrane. This lymphoid tissue is laid down in the mucous membrane of the pharynx as it develops. Even the palatine tonsils are first folds of pharyngeal mucous membrane. These appear early in embryonic life, the lymphoid tissue making its appearance in the fold at a later date. The tonsils consist of reticuloendothelial supporting tissue and lymphoid tissue with and without germ centers. It is no different from the lymphoid tissue in the alimentary tract. The tonsils differ from the lymphoid glands in at least one outstanding feature; namely, they possess no afferent lymphatic vessels, and consequently the lymph stream must always flow from the periphery of the mass.

In addition to the palatine tonsils the other lymphoid structures of the pharynx that have clinical significance are the pharyngeal tonsil, the lingual tonsil, the so-called infratonsillar nodes, which lie just below the palatine tonsils, and the macroscopic lymph masses in the mucous membrane.

In simple hypertrophy without infection, the pharyngeal tonsil is of greater clinical significance than the palatine tonsils, because of its location. Its enlargement may easily interfere with nasal respiration.

The palatine tonsils are the outstanding sources of infection. Their crypts are long and bifurcated. They are often constricted at the opening into the pharynx. No mucous glands open into the bottom of these crypts. Anatomically they are particularly well fitted for the retention of débris such as desquamated epithelial cells and bacteria. The crypts in the lingual tonsil are short and wide and their openings are funnel shaped. They do not easily become harborers of débris. The pharyngeal tonsil and the infratonsillar nodes also contain crypts which become impacted with débris more readily than those of the lingual tonsil and much less easily than those of the palatine tonsil. So far as I know the follicles on the wall of the mucous membrane do not contain true crypts. They do contain the same type of lymphoid tissue as is found in the palatine tonsil; namely, the germinal centers and lymphoid tissue without germinal centers. Because of these structural characteristics the lymph follicles and the lingual tonsil are less often the focus of infection, while the palatine tonsils are the greatest offenders. Nevertheless, in my lifetime I have seen many cases of diseases such as arthritis and glomerular nephritis, which were controlled only by the eradication of infection in the lingual tonsil, and there has been an occasional case in which a satisfactory result was secured only by getting rid of the macroscopic lymphoid follicles in the mucous membrane of the pharynx. In rheumatic fever, heart disease and other conditions the patient may be benefited by the removal of the palatine and pharyngeal tonsils, but a satisfactory result is not secured. Under these circumstances one cannot afford to overlook the lingual tonsil, the infratonsillar nodes and other lymphoid masses in the wall of the pharynx. It is only by repeated examinations of the throat and the careful eradication of these minor sources of infection that the best results are obtained.

This contribution does not consider the nasal sinuses and the ears, which are the other sources of infection about the upper respiratory tract.

The infection of the lymphoid masses of the pharynx is not the cause of rheumatic fever, heart disease, chorea or Still's disease. This can be amply demonstrated by the fact that, while the removal of faucial and pharyngeal tonsils may decrease slightly the incidence of rheumatic fever and heart disease, it certainly does not prevent it.

In toxic malnutrition, secondary to infection of the lymphoid masses in the pharynx, the infection is the outstanding cause. Given a case of malnutrition secondary to infection about the throat with such symptoms as emaciation and interference with growth, if this infection is eradicated there is often a miraculous return to the normal. The weight increases, the height progresses and the child soon becomes normal so far as weight and height are concerned. This is not the case in rheumatic fever, heart disease, chorea or Still's disease. In children with these diseases, eradication of all the infection about the upper respiratory tract will be followed by a period of months or perhaps two years before the child returns to normal. Only by eradication of all infection plus dietetic, hygienic and other kinds of treatment is the desired result secured.

A child with rheumatic fever and no infection about the upper respiratory tract may develop fever which can be controlled by the use of salicylates. This is not the case when the fever is the result of infection of the lymphoid tissue. In short, one must be careful not to assume that tonsillar infection causes many of the systemic diseases that are associated with this condition; rather, one should assume that there is a systemic disturbance which is seriously affected by infection of the lymphoid tissue in the pharynx. This does not invalidate in any way the statement, made earlier in this paper, that the primary consideration in the treatment of many of the systemic conditions is the eradication of infection about the upper respiratory tract.

The removal of the larger masses of lymphoid tissue in the pharynx early in childhood does decrease markedly the incidence of scarlet fever, common colds and otitis. It decreases somewhat the incidence of rheumatic fever, chorea and heart disease in children. It is particularly beneficial in reducing the incidence of cervical adenitis. In my experience the removal of these masses has not decreased the susceptibility to diphtheria. However, the absence of pharyngeal and faucial tonsils favorably influences the course of the disease. There has been much discussion of the excellent work done by Kaiser on the increased incidence of laryngitis, bronchitis and pneumonia in tonsillectomized children. After a serious consideration of this investigation extending over a period of several years, I am convinced that the increased incidence of these pulmonary conditions in tonsillectomized children is due to the fact that, at the time the tonsil operation was performed, nasal sinusitis was present and it is this nasal sinusitis which is responsible for the pulmonary disease.

Because of the importance of determining all sources of chronic infection about the upper respiratory tract in children with such diseases as rheumatic fever, chorea, hemorrhagic nephritis and Still's disease, I always make an examination of the nasal sinuses at the time of the tonsil operation in this class of cases. I do this because the work can be done more advantageously in very young children under general anesthesia. It is the rule to find some suppurative sinus disease. Most of these conditions are controlled by dietetic and hygienic treatment following the tonsil operation. However, many of the sinus infections persist and are important factors in the production of pulmonary disease. I think this question can be definitely answered only by studying the incidence of pulmonary disease in a group of children free of nasal sinus disease that are not tonsillectomized and in a second group of children free of nasal sinus disease at the time of the tonsillectomy.

As will be noted later in this contribution, the lymphoid masses of the pharynx have a decidedly important physiologic function. They should not be removed in children unless the deleterious results of the infected tonsils overbalance the good results of the physiologic action of these structures, or, I may add, the physiologic function has been so seriously interfered with by the infection that their defense reaction has been impaired or lost.

Various functions have been given to the tonsils. The tonsillar crypts are said to be tubes, similar to test tubes, in which organisms develop producing toxins which are absorbed and result in autoimmunization. Waldapfel thinks that they are concerned in filtering out particulate matter from the blood stream. They are said to produce lymphocytes and undoubtedly do produce lymphocytes if they are needed. It has been said that they react against stimulants, bacteria and toxins which penetrate into the lymphoid tissue. Certainly they develop after birth and continue to function until after the age of puberty, when involution occurs. They are said to produce hormones and to furnish digestive ferments.

There is no agreement among physiologists as to the function of the tonsils. I do not know what their function is. The lymphoid tissues of the body are all actively functioning in infancy and in early childhood and they continue to function until involution occurs. I do not know the reason for the involution, but I think it may be assumed that before it occurs the tonsils have performed their main function. In early childhood, very slight infection causes these structures to enlarge. The spleen is easily increased in size, the glands of the neck become hypertrophied easily; it is not unusual at this age to have even the lymph nodules over the mastoid enlarge. Later in life these appear only with pediculosis or with some infection of the scalp or mastoid.

The tonsils as well as other lymphoid structures enlarge easily. Repeated infections, repeated colds, dietary disturbances, endocrine disturbances and toxemias all have a tendency to increase the size of these structures, often without any manifest infection of the lymphoid tissue. There can occur a familial noninflammatory hypertrophy of these structures, sometimes accompanied by dental caries, both undoubtedly being due to some dietetic or endocrine disturbance. It is not necessary to have infection of the tonsils to get these simple hypertrophies.

To me it is certain that the tonsils in infancy and early childhood are a part of the defense mechanism of the body. They protect the organism against those factors which cause them to become acutely swollen. Repeated irritations with swelling do cause simple hypertrophy of these structures. When the tonsils undergo involution at the age of puberty they lose their function.

Rules cannot be made to determine whether or not tonsils should be removed. Each case presents its own problem. The good judgment of the physician must decide in each case just what should be done. He must take into consideration the local conditions, the condition of neighboring structures and the general condition of the patient. Even then, particularly in adults, it is often a gamble as to the results to be secured by tonsillectomy.

It is my custom to tell adults with chronic systemic diseases that may be favorably influenced by the removal of the tonsils that I cannot definitely predict the result. I am influenced very much by the opinion of the internist and we often decide on the basis of probabilities to take the tonsils out. Naturally we are influenced by anything in the history which connects the tonsils with the systemic disease. The tonsils play a much more important rôle as a source of infection in children than in adults; the average result in children is much more satisfactory than in adults.

In cases in which infection of neighboring structures, as the middle ear, nasal sinuses and glands of the neck, can be traced to infection of the tonsils, removal of the latter is indicated. The infection not only spreads through the lymph vessels draining the tonsils but it spreads along the perivascular lymphatic spaces sometimes contrary to the direction of the blood stream. The jugulodigastric lymph gland, lying on the internal jugular vein where it is crossed by the digastric muscle, is more often swollen in infection of the palatine tonsils than the other glands. Its swelling suggests that microorganisms are entering the lymph stream from the tonsils. However, a carious tooth may produce the same result. Its enlargement when due to tonsillar infection suggests that the tonsil is a menace to the body.

Rarely, quiescent tuberculosis of the tonsils is found. This is much less common in my experience today than it was twenty years ago. Tuberculous glands of the neck may be associated with such tonsils. Other conditions cause tuberculous and pyogenic infections of

the glands of the neck, and the fact that there is present an infected tonsil does not mean that it is the cause of the adenitis.

The fact that a tonsil is chronically inflamed without any evidence of local or systemic disturbance is not sufficient reason for its removal. I grant that I have advised against the removal of such a tonsil and the patient has developed an acute tonsillitis a few months later with acute arthritis. This was his first attack of acute tonsillitis. Naturally if a tonsil is present it can become acutely infected, but that is no reason for removing all tonsils.

I have convinced myself by meticulous observations, each covering a period of years in two large training schools for nurses, that the routine removal of faucial tonsils in probationers is a justifiable procedure. An undergraduate nurse, however, is particularly liable to develop acute tonsillar infections. In spite of all precautions, nurses do get ill at the times when the hospitals are crowded. This results in overwork of the nurse as well as of the doctor; outdoor privileges may be curtailed and the weather may prevent proper exercise at a time when the nurse is exposed to the most virulent infections. In an official report to the governing board of a hospital the statement was made that the routine removal of tonsils in probationers had so decreased the incidence of sickness that the financial aspect of the institution was improved. Doctors, nurses and dentists present more indications for the removal of their tonsils than those not so often exposed and overworked during the periods of epidemics.

Simple hypertrophy of the tonsils may demand their removal in order to get normal breathing. Familial hypertrophy of the lymphoid tissues of the throat may occur without macroscopic evidence of infection. Some of these tonsils show no more evidence of infection on microscopic examination than the most normal tonsils. Sometimes children with this condition have carious teeth, as in a group studied by Dr. McCulloch in our service. Hyperplasia of the tonsils, hyperplasia of the other lymphoid tissues of the body and carious teeth go together. Enlargement of the spleen, carious teeth and simple hypertrophy of the tonsils are found in rickets. Many of the hypertrophied tonsils are not macroscopically inflamed even in the presence of malnutrition and carious teeth. This suggests that they combat infection or at least are very resistant to it. The great improvement in breathing in these children after the removal of faucial and pharyngeal tonsils certainly justifies the interference with the physiologic action of the structures removed. There is no reason to think that the remaining lymphoid tissue in the pharynx does not meet the exigencies of the situation. Tonsillotomy leaves the remaining scarred tonsil tissue a menace to the individual.

The removal of macroscopically normal tonsils and hypertrophied tonsils with no evidence of infection has favorably influenced cases of hemorrhagic nephritis, uveitis or rheumatic fever. A number of pediatricians, internists and otolaryngologists decided that a pair of faucial tonsils appeared to be perfectly normal. It was the unanimous opinion that they should be removed because of a nephritis. They were removed with benefit to the patient. Consequently it is evident that the general condition of the patient has much to do with the decision as whether or not to remove tonsils.

Given a patient with a systemic condition that is often favorably influenced by the removal of infected tonsils and perfectly normal looking tonsils, I feel that the tonsils should be removed, particularly if the condition refuses to yield to other forms of treatment. To put it more plainly, I think that if a patient has hemorrhagic nephritis, a heart lesion, a rheumatic fever or a uveitis which continues active in spite of every effort to make it quiescent, this condition in itself is an indication for the removal of these lymphoid structures. Certainly by carrying out such a procedure, the cases in which satisfactory results are obtained greatly outnumber the cases in which such results are not secured. The seriousness of the conditions under consideration justify this procedure.

The apparently normal tonsils that we have removed because of a systemic disease have been examined microscopically. In every instance chronic infection involving the epithelium was found deep down in the crypts. The evidence of infection found in the crypts is a leukocytic infiltration of the epithelium and underlying lymphoid tissue with some destruction of the protective epithelium. In some cases in which the tonsils have been removed because of simple noninflammatory hypertrophy such areas have not been found.

If judgment is based on the systemic condition of the patient, one must be careful not to remove the tonsils when the condition has progressed to such a stage that it is impossible for the removal of infected lymphoid tissue to exert a favorable influence. Tonsils should not be removed because of the presence of so-called chronic chorea, in which the contractions are due to an unstable nervous system and are not due to true chorea. In the same way in nephritis, the disease may progress to a stage at which the pathologic changes in the kidney are such that it will not be influenced by the removal of the tonsils. In dealing with chronic arthritis one must be certain that the pathologic condition is such that it will probably be benefited by the eradication of a focus of infection. It is necessary in these cases to have the most intimate cooperation between the pediatrician or the internist and the laryngologist. The determination as to whether or not the tonsils should be removed is often dependent on the ability to prognosticate that a systemic condition will probably be influenced by the eradication of infected lymphoid tissue. Certainly there is need of doing this when the systemic condition is deleteriously influenced even by the mildest acute attacks of pharyngitis.

I cannot say that any tonsil is not the seat of chronic infection except after removal and microscopic study. Study in the laboratory has shown definite evidence of infection in the most innocent looking tonsils. The history of acute tonsillitis is a more reliable indication of chronic infection than the appearance of the tonsil.

I do not like to remove palatine tonsils under the age of 2 years. There are two reasons for this: first, this is the age during which the tonsillar function is most important; second, the operation at this age is more serious than later. If however, there is a definite indication for the removal of the tonsils, it should be done. If an infant suffers from attacks of acute tonsillitis and if with one attack it develops a lobar pneumonia which improves only with an improvement in the throat condition, it would be hazardous to leave the tonsils in. Adenoids blocking the nasopharynx may be removed at any age.

Practically, the removal of tonsils is always a gamble. Even if they are infected it is not necessarily true that they are the focus for systemic disease. In most cases

in which I have urged the removal of the tonsils, except in instances with definite local indications, they were removed on the basis of chance. If the patient thoroughly understands this before the work is done, there will be many fewer complaints regarding the needless removal of tonsils. Excluding the immediate deleterious effects of the tonsil operation such as lung abscess and infection of the cervical glands, in my own service I have yet to encounter the first case in which I or the family felt that there resulted any permanent deleterious effect from the tonsil operation.

Rules cannot be laid down for the practice of medicine. There are a multitude of factors bearing on the question as to whether or not tonsils should be removed. The judgment must rest with the individual after a thorough study of the case. If this is most carefully done, the patient need not worry about having a deleterious result from the removal of these structures.

ABSTRACT OF DISCUSSION

DR. FRANK R. SPENCER, Boulder, Colo.: Some of the indications that are less frequently mentioned are as follows: 1. Impaired hearing made worse by each acute attack of tonsillitis even though the attacks are rather mild and in themselves might not attract attention. I do not believe the impaired hearing is likely to be made normal by the operation, but the progress of the disease may be stopped. 2. Acute or chronic infection of the tonsils in patients with goiter. Dr. Joseph C. Beck was one of the first to call attention to this. 3. Sinusitis in children which doesn't respond to treatment and in children with infection and enlargement of the tonsils which may not be marked enough to demand an early tonsillectomy.* I am familiar with the argument that the removal of the tonsils in children with sinus disease is often contraindicated. Perhaps in some patients it is, but I do not entirely agree with this principle. The infection in the tonsils is only another straw added to break the camel's back. Such children may recover from the sinus disease without sinus surgery if the tonsils and adenoids are removed. 4. Chronic suppurative otitis media, especially when aggravated by acute or chronic infection of the tonsils. 5. Bronchiectasis aggravated by acute or chronic tonsillitis. 6. Chorea, often improved by early tonsillectomy before the chorea becomes chronic. I know little about the function of the tonsils. However, I try to avoid removal of the tonsils in children under 4 years of age unless forced to do so by definite indications. The tonsils and adenoids may have some physiologic function as ductless glands in infants and young children up to 4 or 5 years of age. This has not been proved, but it is substantiated by clinical observation. A few of these children change after operation as if suffering from hypothyroidism. The tonsils may have a protective function similar to that of the reticulo-endothelium. Furthermore, after tonsillectomy in children the lymphoid tissue over the lateral pharyngeal wall enlarges sometimes. This enlargement may assume serious proportions and resemble a piece of tonsil. It may harbor infection and call for cauterization or coagulation. Swabs and cultures of the tonsils give little practical information because of the great variety of germs found and the extreme variation in virulence. I pay little attention to the bacterial indications except when the diphtheria bacillus is reported. I approve of Dr. Dean's "follow up" system for two years after operation to determine end results. This gives added authority to his mature conclusions.

DR. EDWARD CLAY MITCHELL, Memphis, Tenn.: In cases in which there are large, diseased tonsils and adenoids productive of difficult breathing their removal is indicated. The hypertrophied tonsil with no history of disease should be left alone. Recurrent tonsillitis is often seen when the first attack would be quite severe, classified probably as class 4; the next attack would be much lighter, the third attack still lighter, and the child probably would have no further tonsillitis, showing perhaps that he had developed some immunity. In discussing the tonsils as a focus of infection, three factors should be thoroughly studied. First, is the tonsil the sole cause of the condition? Second, will the removal of the diseased tonsil cure the systemic condition? Third, when should the diseased tonsil be removed? Rheumatic fever is one of the most common conditions in which the tonsil is blamed. Other common systemic infections in children when the tonsil is spoken of as the offending factor are kidney conditions such as nephritis, particularly of the acute glomerular type, pyelitis and enuresis. For all these conditions the tonsil is being removed, sometimes with benefit and in many instances with no improvement. There is much controversy as to whether the tonsil should be removed in the acute glomerular nephritis while the upper respiratory condition is still acute, when nephritis does not improve under proper treatment. In my experience many times rapid improvement has been shown when the focus of infection was eradicated even during the acute stage. Of course, I recommend waiting until all the acute symptoms have subsided when possible. In a symposium held by the American Academy of Pediatrics, the statement was made that cyclic vomiting in 50 per cent of the cases was markedly improved by a tonsillectomy. However, it would seem to me that age incidence plays a part. Tonsillectomy has been recommended for dulness and inattention in school, particularly where the adenoid symptom is manifest. In a large series of cases Kaiser found the sedimentation time markedly increased following tonsillectomy. His average patient lost 2 pounds following tonsillectomy. Hemorrhages can largely be prevented by careful consideration and examination of the child before the operation. I should like to ask whether the paranasal sinusitis is more common after tonsillectomy. In the younger child I sometimes find no history of tonsillitis but very large tonsils and enormous adenoids that interfere with breathing. It is often the question as to whether only the adenoids should be removed and the tonsil left. I believe that the healthy tonsil should remain and only the offending adenoid removed. Should small stubs of tonsils left from a former operation be removed? Another type of patient seen is the child who presents himself with definite paranasal sinusitis, likewise diseased tonsils and adenoids. Should the tonsils and adenoids be removed and the sinuses drained at the same time?

DR. VIRGIL J. SCHWARTZ, Minneapolis: Waldapfel finds that when bacteria are introduced, through even slight injury, into one inferior turbinate, they traverse the venous, not the lymphatic, channels of the nose and pharynx to reach the tonsils and are eliminated into the crypts. Scherf finds that pigments such as india ink, after injection into the carotid artery, are excreted through and can be demonstrated in the tonsils. They think, therefore, that the tonsils assist in removing foreign material from the blood stream. Heiberg sponsors a second theory, that the germinal centers of the tonsils destroy lymphocytes while other parts of the tonsil produce lymphocytes. Schmidt believes that these destroyed lymphocytes liberate an endolysin, which may reach the general blood stream to produce a sudden leukopenia. Hoepke thinks that in the normal tonsil the germinal centers produce lymphocytes but that when irritated by toxic or inflammatory substances they produce phagocytosing reticular cells. Kelemen found that, whereas ordinary leukocyte extract promotes the growth of fibroblasts and other cells in culture, tonsil extract prevents their growth. The latter also may inhibit growth in guinea-pigs. Wolffheim proposed a fourth theory, that children's tonsils and other lympho-epithelial structures, including Peyer's patches and the appendix, are the principal site of the occult immunization of the body against infectious organisms that enter the digestive and respiratory tracts. Digby, too, inclines toward this view of continuous autovaccination. Bacteria, he thinks, on or near these lymphoid structures are attracted by positive chemotaxis through the epithelium into the lymphoid nodule. The bacterial attack is usually repelled by the development of a great excess of special lymphocytes, opsonins, bacteriolysins and other immune substances, which enter the general system and so reduce the danger of bacterial infection elsewhere. I am certain that some of the laryngeal and bronchial irritations which appear to be more common after tonsillectomy than before are not inflammations at all but allergic manifestations that were not recognized at the time the tonsillectomy was performed. Tonsil examination should always begin with palpation of the deeper glands of the neck, the anterior of which, lying beneath the

anterior margin of the sternomastoid muscle, may stand alone as incriminating evidence against the tonsil which it drains. The incidence and course of scarlet fever and diphtheria are greatly benefited by tonsillectomy. Children who have pathologic tonsils and develop a contagious disease must combat not only the latter but often also an acute, severe tonsillitis with all its potential complications, such as acute adenitis, or otitis. The latter are the sequelae of the tonsillitis rather than of the contagious disease.

D. L. W. DEAN, St. Louis: In familial hypertrophy the tonsils usually cause trouble by interfering with breathing. With familial hypertrophy of the tonsils there almost always is caries of the teeth. In rickets there are an enlarged spleen, caries of the teeth and noninflammatory hypertrophy of the tonsils. All three conditions are probably due to deficient diet or endocrine disturbance. The fact that in familial hypertrophy of the tonsils there are caries of the teeth and noninflammatory hypertrophy of the tonsils suggests that the lymphoid tissues of the pharynx combat infection. There is usually no history of tonsillitis. It is almost impossible to control the caries of the teeth without getting rid of the tonsils, which are blocking the pharynx. Trimming the tonsils is a bad thing because the crypts are constricted by scar tissue and become a potential focus of infection. Some twelve years ago I made routine observations on all tonsils removed for a period of two years and found that about 2 per cent presented latent tuberculosis. This condition could not be diagnosed except by microscopic examination of the tonsil after the operation. Now I see only about one case or two cases at the most in a year that show microscopic evidence of latent tuberculosis of the tonsils on routine examination. I think this is due to the improved supervision of the milk supply of Saint Louis. In a pharyngeal tonsil that was removed because of phlyctenular conjunctivitis, there were two areas of caseation in the tonsil. Acid fast organisms were scattered throughout the lymphoid tissue of this mass. This pharyngeal tonsil presented, on clinical examination, nothing except the evidences of moderate simple hypertrophy. It was removed because the patient had phlyctenular conjunctivitis. The conjunctivitis did well after the removal of this latent tuberculous lymphoid mass. I do not like to remove palatine tonsils under the age of 2 years, for two reasons: First, this is the time when the tonsil function is more important; second, the operation at this age is more serious than later. If, however, there is a definite indication, they should be removed. If an infant suffers from attacks of acute tonsillitis and if with one attack it develops a lobar pneumonia which improves only with the improvement in the throat condition, it would be hazardous to leave the tonsils in. If this occurs in midwinter and the weather is not favorable for the removal of the tonsils, I fear another attack of tonsillitis and pneumonia. Adenoids blocking the nasopharynx may be removed at any age. Practically, removal of tonsils in an adult for systemic conditions is always a gamble; it is less so in children. Even if in the adult they are infected, it is not necessarily true that they are the focus for systemic disease. In most cases in which I have urged the removal of tonsils, except when there were definite local indications for their removal, they were removed on the basis of chance.

Primary Malignant Tumor of Bone Marrow.—Multiple myeloma may be defined as a primary malignant tumor of bone marrow characterized by multiple foci in long and flat bones of the skeleton and usually associated with anemia, Bence-Jones proteinuria, rare metastasis and a fatal termination. MacIntyre described the condition in 1850, but von Rustizky first recognized it as a specific disease of the bone marrow, and referred to it as myeloma. Kahler, in 1889, called attention to the associated proteinuria, hence the reference in the literature to "Kahler's disease." Geschickter and Copeland, in 1927, reviewed 425 cases from the literature, and stated that multiple myeloma was present in only 0.03 per cent of all malignant conditions. Symmers found only three cases of the condition in the course of 6,000 postmortem examinations performed at Bellevue Hospital, New York City. Thus the rarity of multiple myeloma is evident.—Slavens, J. J.: Multiple Myeloma in a Child, *Am. J. Dis. Child.* **47**:821 (April) 1934.

ANTITOXIN VERSUS NO ANTITOXIN IN SCARLET FEVER

PASCAL F. LUCCHESI, M.D.
AND
JAMES E. BOWMAN, M.D.
PHILADELPHIA

Much has been written during the past few years on the use of scarlet fever antitoxin in the treatment of this disease. Many prominent physicians, such as Veldee, Stevenson and Mitchell,[1] Winkel,[2] Lichtenstein,[3] and Gordon,[4] supported by considerable personal experience, proclaim with great emphasis that when scarlet fever antitoxin is administered early and in sufficient quantity there follows a decline in the fever, a reduction in the number of febrile days and a decrease in the incidence of complications. On the other hand, just as many physicians of equal prominence and experience, as Toomey and Dolch,[5] Gabriel[6] and Rolleston,[7] disagree in part or in toto with these observations. Toomey believes that the slight amount of good noticed in the use of this antitoxin is counterbalanced by the ill effects produced in the occurrence of serum disease. We have therefore set out without any fixed opinion to study a group of 5,377 records of scarlet fever patients admitted to the Philadelphia Hospital for Contagious Diseases during the years 1927, 1928 and 1929. These years were selected only because they represent the first three years of the use of antitoxin at this hospital. We had no part either in the selection of the patient or in the amount of antitoxin to be given. As a matter of fact, antitoxin was given to all patients who were not hypersensitive to this serum. The antitoxin used was purchased from different manufacturers; consequently it varied greatly as to concentration and protein content. Every patient was skin tested for sensitivity to the antitoxin. Those found positive were treated symptomatically. They formed a large number of the control group. Because of the variations in the types of scarlet fever, it was decided to subdivide the patients into groups that would denote the severity of the disease. Accordingly, cases in which the temperature did not exceed 100 F. by mouth were classified as mild; those in which the temperature was over 100 F. but did not exceed 102.5 F. as moderate, and those in which the temperature exceeded 102.5 F. as severe. Thus the 5,377 cases were divided into 1,162, or 21.6 per cent mild; 3,158, or 58.7 per cent moderate, and 1,017, or 18.9 per cent severe.

In view of the controversy that exists on the frequency and virulence of serum disease, this angle was likewise studied. Some of the patients in the serum group received ephedrine, while others received ephedrine and calcium, with the hope that the effect produced on the incidence of serum disease might be noted.

Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Veldee, M. V.; Stevenson, F. E., and Mitchell, A. G.: Scarlet Fever Streptococcus Antitoxin in Treatment of Scarlet Fever, Pub. Health Rep. **46**: 3023 (Dec. 18) 1931.
2. Winkel, E.: München. med. Wchnschr. **79**: 707 (April 29) 1932.
3. Lichtenstein, A.: Studies in Scarlet Fever, Acta pædiat. **10**: 549 (June 30) 1931.
4. Gordon, J. F.: Treatment of Scarlet Fever with Streptococcus Antitoxin, J. A. M. A. **88**: 382-385 (Feb. 5) 1927.
5. Toomey, J. A., and Dolch, E. G.: Scarlet Fever, Am. J. Dis. Child. **36**: 1173-1183 (Dec.) 1928.
6. Gabriel, E.: Klin. Wchnschr. **43**: 1205 (Sept. 25) 1930.
7. Rolleston, J. D.: Antitoxin Treatment of Scarlet Fever, Practitioner **125**: 236 (July) 1930.

EFFECT OF ANTITOXIN ON THE DURATION OF FEVER

In 3,045 cases, antitoxin was administered in doses ranging between 6,000 and 8,000 units. These were divided into 296 mild, 1,949 moderate and 800 severe cases. The average amount of antitoxin in the mild group was 6,870 units; in the moderate, 7,310 units; in the severe, 7,800 units. The smallest dose was 3,000 units; the largest was 20,000 units. It was administered intramuscularly.

Since the diagnosis of scarlet fever depends largely on the onset of the eruption, very few patients were admitted within the first twenty-four hours of their illness. Consequently the majority of patients received antitoxin from forty-eight to ninety-six hours after the onset of the disease. Therefore it must be noted that the day on which antitoxin was given corresponds to the day of admission to the hospital. The number of patients who did not receive antitoxin was 2,332; of this number there were 866 mild, 1,209 moderate and 257 severe cases.

TABLE 1.—*Duration of Fever*

Day of Disease Antitoxin Given	Mild Group (Maximum Fever Not Exceeding 100 F.)					Moderate Group (Maximum Fever 100-102.5 F.)					Severe Group (Maximum Fever Over 102.5 F.)				
	No Serum		Serum			No Serum		Serum			No Serum		Serum		
	Number of Cases	Duration of Fever	Number of Cases	Duration of Fever	Difference	Number of Cases	Duration of Fever	Number of Cases	Duration of Fever	Difference	Number of Cases	Duration of Fever	Number of Cases	Duration of Fever	Difference
First	20	3.44	17	3.42	−0.02	49	4.55	88	4.48	−0.07	9	5.00	33	5.93	+0.93
Second	162	4.15	92	3.79	−0.36	309	5.50	700	4.95	−0.55	77	7.31	277	6.02	−1.29
Third	158	5.21	71	4.77	−0.44	331	6.28	603	5.59	−0.61	69	8.17	285	7.01	−1.16
Fourth	139	6.10	48	5.18	−0.92	274	7.26	364	6.52	−0.74	43	9.23	135	7.56	−1.72
Fourth plus	387	9.04	68	6.33	−2.71	246	10.48	194	8.18	−2.30	59	11.75	70	9.38	−2.37
	866	6.82	296	5.15	−1.67	1,209	708	1,949	5.74	−1.34	257	8.80	800	6.92	−1.88

TABLE 2.—*Percentage of Complications: Comparison of Complication Incidence in Serum and Nonserum Groups—Totals for Three Years*

	3,045 Serum		2,332 No Serum	
	Cases	Per Cent	Cases	Per Cent
Otitis media	225	7.39	229	9.83
Mastoiditis	26	0.85	26	1.16
Adenitis	184	6.04	257	11.03
Nephritis	39	1.28	29	1.24
Arthritis	21	0.69	38	1.63
Furunculosis and abscess	22	0.72	4	0.17
Peritonsillar abscess	14	0.46	3	0.13
Bronchopneumonia	15	0.49	14	0.60
Miscellaneous (empyema, pyelitis, and so on)	28	0.95	10	0.43
Total percentage	575	18.85	610	26.13

It can be seen (table 1) that antitoxin shortens the febrile stage of the disease, irrespective of the severity. Except for the patients who received antitoxin within the first twenty-four hours of their disease, there was noted a definite decline in the temperature and a reduction in the febrile days ranging from 0.02 day to 2.71 days. The later the administration of antitoxin in relation to the day of disease, the longer the duration of fever. The reason for the failure of those cases in which antitoxin was given in the first twenty-four hours to follow the general rule is not clear in our minds. Although the reduction of the febrile days is not outstanding in the mild and moderate serum treated cases, it is nevertheless impressive in the severe group. Here the reduction ranged from 1.16 to 2.37 days and was more constantly observed. The average number of febrile days for the mild serum treated cases was 5.15, while for the nonserum group it was 6.82; for the moderate serum treated it was 5.74 and for the nonserum group 7.08; for the severe serum treated it was 6.92 and for the nonserum group 8.80.

EFFECT ON THE INCIDENCE OF COMPLICATIONS

It was definitely noted that the incidence of complications was less in the group of serum treated patients (table 2). The total percentage of complications in the 3,045 serum treated was 18.85, in contrast to 26.13 per cent for the 2,332 nonserum treated. The most striking decrease in the number of complications was noted in otitis media, adenitis and arthritis groups, which incidentally accounted for 75 per cent of the total number of complications. It may be seen that there is very little difference in the incidence of nephritis and bronchopneumonia in the two groups.

A study of the incidence of complications in relation to the severity of the disease (table 3) shows even more definitely the part played by antitoxin in this respect. As every one suspects, the incidence of complications is in direct proportion to the severity of the disease. In the mild serum treated group the incidence of complications was 11.13 per cent, in comparison to 18.51 per cent in the nonserum treated; moderate serum treated 17.74 per cent and nonserum treated 27.58 per cent; severe serum treated 26 per cent, and nonserum treated 52.79 per cent. Thus it is observed that the influence of antitoxin in the incidence of complications becomes more striking in the more severe forms of the disease.

TABLE 3.—*Percentage of Complications in Each Group*

	Mild Percentage of Complications in		Moderate Percentage of Complications in		Severe Percentage of Complications in	
	296 Cases With Serum	866 Cases Without Serum	1,949 Cases With Serum	1,209 Cases Without Serum	800 Cases With Serum	257 Cases Without Serum
Otitis media	5.07	6.70	6.73	10.42	9.99	18.23
Mastoiditis	0.67	1.39	0.87	0.57	1.00	3.50
Adenitis	3.72	7.86	5.65	11.64	7.75	18.68
Nephritis	0.33	1.27	1.28	1.00	1.50	2.32
Arthritis	0.00	0.69	0.72	1.65	0.87	3.84
Furunculosis and abscess	0.33	0.24	0.67	0.08	1.00	0.38
Peritonsillar abscess	0.00	0.24	0.56	0.08	0.37	0.00
Bronchopneumonia	0.00	0.00	0.31	0.57	1.12	2.72
Miscellaneous (empyema, pyelitis, and so on)	1.00	0.00	0.91	0.57	2.59	1.18
Totals	11.13	18.51	17.74	27.58	26.00	52.79

A death rate in the 3,045 cases in which antitoxin was given was 0.85 per cent (twenty-six), while in the 2,332 cases in which serum was not given the death rate was 0.43 per cent (ten). A greater death rate in

the group in which serum was given may be explained by the treatment of a larger number of more critically ill patients in this group, 30 per cent of whom died within twenty-four hours after admission to this hospital. There were no deaths from anaphylaxis.

SERUM DISEASE

The high frequency of fairly severe serum reactions that followed the use of scarlet fever antitoxin in the early days of its inception is perhaps the chief reason why it is not in more general use today. Investigators report the incidence of serum disease at figures varying from 15 per cent in Doolittle's [8] series to nearly 100 per cent in Bagley's [9] experience. Undoubtedly the high incidence and severity of serum disease reported by some investigators is partly due to the insufficient refinement and concentration of the early serums. This was definitely the case at the Philadelphia Hospital for Contagious Diseases. Antitoxin purchased from different manufacturers varied greatly as to concentration, and therefore a greater number of serum reactions occurred in those who received serum of low concentration. Today, this has been practically eliminated.

In our study, 36.3 per cent of 1,106 patients had serum disease (table 4). A few of these reactions were immediate, but most of them were manifested by delayed urticarial lesions accompanied by moderate

TABLE 4.—*Incidence of Serum Reactions*

	Number	Per Cent
Patients receiving serum	3,045	
Patients having serum reactions: 1927 313		
1928 477		
1929 316		
	1,106	36.3
Patients receiving ephedrine (1,028) and having serum reaction	339	33.0
Patients receiving capsules (ephedrine and calcium) (358) and having serum reaction	123	34.5
Patients receiving nothing (1,659) and having serum reaction	644	38.8

fever, generalized adenopathy and arthralgia, which tended to make the patient uncomfortable for three or four days. Less common features were morbilliform or scarlatiniform eruptions, mild or severe febrile reactions.

From time to time it has been attempted to decrease the number and severity of these uncomfortable conditions through the aid of certain drugs. Some of the patients in this series received ephedrine salts in doses of from one-eighth to 1 grain (0.008 to 0.065 Gm.) daily for seven days; others were given one or more capsules containing a similar dose of ephedrine plus calcium. Ephedrine was given to 1,028 patients. In this group the incidence of serum disease was 33 per cent. Ephedrine and calcium was given to 358 patients. In this group the incidence of serum disease was 34.5 per cent, while serum disease occurred in 38.8 per cent of the 1,659 patients who did not receive any drugs.

SUMMARY

1. Of 5,377 cases of scarlet fever studied, scarlet fever antitoxin was administered in 3,045 and was not administered in 2,332.

2. In a comparison of the serum with the nonserum treated cases, a slight decrease in the number of febrile days in the mild and moderate groups was noted, and a substantial reduction in the severe group.

3. The incidence of complications was definitely less in the serum treated cases in comparison with those not so treated. This effect was most prominent in the severe group.

4. Serum reactions occurred in 36.3 per cent of the patients treated with antitoxin. The use of ephedrine compounds had a slight effect on the prevention of serum disease.

CONCLUSION

Antitoxin is indicated in the moderate and severe forms of scarlet fever.

Front and Luzerne streets.

8. Doolittle, S. E.: Northwest Med. **26**: 26 (Jan.) 1927.
9. Bagley, H. E.: J. Michigan M. Soc. **26**: 48 (March) 1927.

THE SECONDARY CASE OF SCARLET FEVER

ARCHIBALD L. HOYNE, M.D.
AND
JOHN HAYS BAILEY, PH.D.
CHICAGO

During the year 1932 certain changes made in the scarlet fever quarantine requirements by the Illinois State Department of Health and the Chicago Board of Health offered an unusual opportunity for a study of the secondary case of scarlet fever and the duration of scarlet fever infectivity. Four series were investigated, in which 4,315 patients were discharged from the Municipal Contagious Disease Hospital under different regulations.

In the first group the quarantine period was four weeks for uncomplicated cases. Patients with abnormal discharges, however, were held in the hospital until they were clinically well, with the stipulation that the maximum period should not exceed ninety days. Under this arrangement, between Jan. 1 and July 6, 1932, there were discharged 1,454 patients, 235 of whom were adults. Among the 1,454 patients, sixty-two, or 4.2 per cent, were responsible for secondary or so-called return cases of scarlet fever. To these sixty-two patients, eighty-two new cases of scarlet fever could be directly traced. The latter number were admitted to the hospital. How many more secondary cases may have occurred is not known, for obviously additional ones may have entered other contagious disease hospitals or have been cared for in their own homes. Adults made up 9.7 per cent of the sixty-two patients responsible for infecting others. This in effect contradicts the inference of Gordon [1] that adults are not an important factor as foci for secondary cases of scarlet fever.

Of the sixty-two patients responsible for secondary cases there were but seven who had had complications of a suppurative nature. On the other hand, the remainder (fifty-five) had at no time suffered from abnormal discharges, although sixteen of these did have either cervical adenitis, nephritis or other nonsuppurative conditions. The remaining thirty-nine (62 per cent) had experienced no complications whatever. Expressed in percentage, it is evident that only 11 per cent of the secondary cases were due to released patients who had suffered from septic processes (chart 1). Thus it is apparent that the very type of released patient that one might regard with the greatest fear from an infec-

From the Municipal Contagious Disease Hospital, Chicago Board of Health.

Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Gordon, J. E.: Epidemiology of Scarlet Fever, J. A. M. A. **98**: 519 (Feb. 13) 1932.

tive standpoint was in reality the least dangerous. Although 342 of the total patients discharged had had complications of a suppurative nature, there were but seven of these who transmitted scarlet fever following their release.

The eighty-two secondary cases of scarlet fever mentioned may be divided as follows: fifty, or 61 per cent, could be traced to thirty-nine uncomplicated cases; twenty-one, or 25.7 per cent, were linked to primary cases which had had cervical adenitis or other nonsuppurative conditions, while the remaining eleven, or 13.3 per cent, were the only ones traceable to primary cases that had experienced any septic process. This demonstrates that the patient who has had uncomplicated scarlet fever is no less likely to transmit infection to others than the patient who has suffered from suppurative processes during the acute attack.

Among the eighty-two secondary cases described, it is interesting to note that suppurative processes developed in 23 per cent, while septic complications had occurred in only 11 per cent of the primary cases. In other words, the rate of suppurative complications among the secondary cases was more than 100 per cent greater than among the primary cases. This indicated that the virulence of the organism is likely to be increased by passage from one sibling to another.

The quarantine regulations in group 2 provided that all uncomplicated cases of scarlet fever be released from the hospital at the end of three weeks. If there were complications, however, it was necessary that the patient be held until clinically well or until two cultures on blood agar from any abnormal discharges taken one week apart were negative. With these quarantine regulations in force, 500 scarlet fever patients were released during the period between July 7 and Nov. 28, 1932. All but thirty-eight were children. Among the total it was definitely established that thirty-five individuals

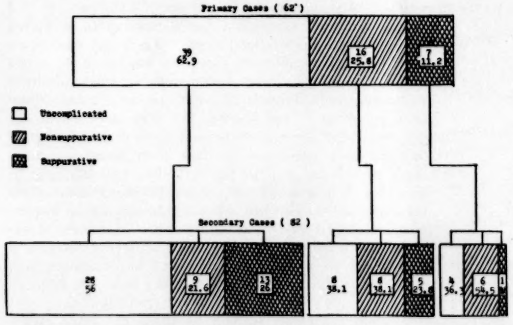


Chart 1.—Four weeks quarantine period. In the charts the upper figure gives the number of cases in each group, the lower figure the percentage.

(7 per cent) were the cause of fifty-nine secondary cases of scarlet fever, nor does this take into consideration, as pointed out in regard to group 1, the possibility of other secondary cases that did not enter the hospital and were thus unknown to us.

Among these thirty-five primary cases, only six had presented suppurative processes, whereas twenty-one were entirely free from complications. Again we were impressed with the fact that 60 per cent of the primary cases had presented no complications, yet this 60 per cent contributed 56 per cent of the secondary cases in this group.

Of the fifty-nine secondary cases, suppurative processes developed in fourteen, or 23 per cent. On the other hand, only 17 per cent of the released patients responsible for secondary cases had had suppurative conditions. As in the preceding group, it is shown that the number of suppurative cases is greater among the

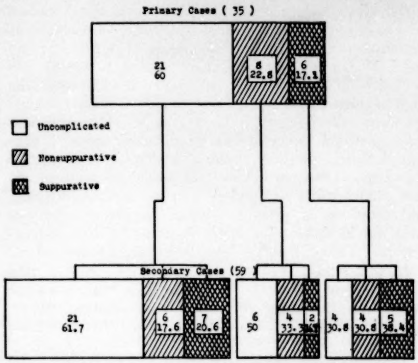


Chart 2.—Three weeks quarantine period without culture.

secondary infections than among the primary infections. Furthermore, in contrast to the 56 per cent of the secondary cases that were traceable to released patients who had suffered from no complications, only 22 per cent were attributable to patients with suppurative complications. Expressed in terms of percentage, this means that the occurrence of suppurative complications was more than 50 per cent greater in the secondary cases than in the primary ones (chart 2).

In the 500 releases of group 2, only 7 per cent were adults and all the secondary cases arose from children. Here we call attention to the fact that scarlet fever patients released from the hospital as recovered transmitted the disease to others during the warm months of the year, notably July, August and September. Moreover, though most of the patients in the group were released during the warm season, the infectivity rate was at its peak (7 per cent) and the secondary rate was likewise at its height (11.8 per cent). This diametrically opposes the opinion of Gordon,[1] who states that "the secondary case rate [of scarlet fever] is materially lower" during the summer months.

Group 3 was made up of patients who were released under quarantine regulations which stipulated that a negative nose and throat culture on blood agar be secured in every uncomplicated case before dismissal, regardless of the prolongation of hospitalization. Three weeks, however, was the minimum quarantine period. In complicated cases the rules were the same as set forth for group 2. With the foregoing requirements in force there were 272 patients, twenty-four of whom were adults, released from the hospital between Nov. 29

and Dec. 24, 1932. In this small group, but eight were shown to have infected others following their release, resulting in a total of nine secondary cases, or slightly more than a ratio of 1 per primary patient, whereas in groups 1 and 2 the ratio was nearer 2 to 1.

While this group concerns only 272 patients, we nevertheless believe that it is of interest in connection with the quarantine problem as it pertains to scarlet fever. Under this plan there were less than 3 per cent known to have transmitted scarlet fever following release. Among these eight, however, it was again disclosed that the complicated case was not a greater source of danger than the uncomplicated, for these two classes of patients were equally divided. In this particular group, four uncomplicated cases were responsible for four secondary cases, two of which showed complications of a suppurative nature, whereas the other four were responsible for transmitting scarlet fever to five patients, three of whom developed complications. While this ratio differs slightly from that shown in the previous groups, we believe it may be explained on the basis of the small number of released patients (chart 3).

In group 4 the quarantine requirements specified that all uncomplicated cases of scarlet fever were eligible for release at the end of three weeks, provided a negative nose and throat culture on blood agar be secured before dismissal. This culture was taken as a routine procedure on the nineteenth day. If such a culture was positive, the patient with no complications was then held in quarantine for an additional week, being released at the end of twenty-eight days without further effort

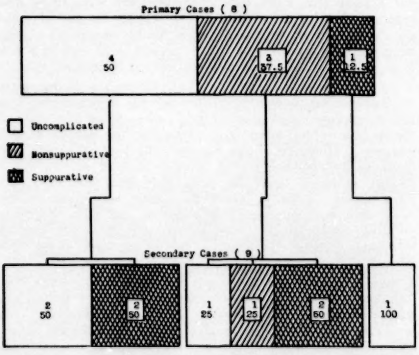


Chart 3.—Released only on negative culture.

to determine by means of cultural methods whether or not he continued to harbor hemolytic streptococci.

If the patient suffered from a complication, he was held, as in the preceding group, until he was clinically well or until two successive negative cultures were secured from any abnormal discharges. These cultures were taken on blood agar plates at weekly intervals. In this group there were released between Dec. 25, 1932, and July 6, 1933, 2,089 scarlet fever patients, 323 of whom were adults. Eighty-five, or 4 per cent, of the discharged patients were responsible for 132 secondary cases of scarlet fever. In view of the opinion sometimes expressed, which has been previously referred to, it is interesting to note that 9.4 per cent of the eighty-five known vectors were adults. This again emphasizes the part the adult may play in the transmission of scarlet fever.

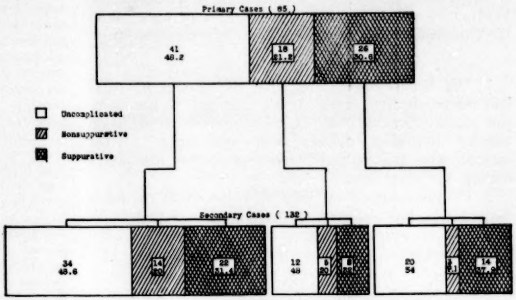


Chart 4.—Released after three weeks if culture was negative; if not, after four weeks.

We have mentioned that, under the arrangement applied in group 4, eighty-five of the 2,089 patients dismissed from the hospital were sources of infection in which 132 known cases of scarlet fever developed. Of the eighty-five patients there were but twenty-six (31 per cent) who had suffered from suppurative processes, while forty-one, or 48 per cent, did not have any complications. These gave rise, however, to seventy of the secondary cases (53 per cent), while the twenty-six patients (31 per cent) who had experienced suppurative complications were responsible for only thirty-seven of the secondary cases (28 per cent) in this group. The remaining eighteen suffered from such conditions as

TABLE 1.—*Summary of Observations*

	Adults	Children
Number of patients discharged	620	3,695
Number of patients transmitting scarlet fever	14	176
Infectivity rate	2.29%	4.76%
Number of secondary cases	26	256
Secondary case rate	4.1%	6.9%

cervical adenitis or other nonsuppurative conditions (chart 4).

Therefore, fifty-nine of the total eighty-five patients in this group who served as foci of infection had experienced no complications of a suppurative nature. This again demonstrates the fallacy of believing that it is only the scarlet fever patient who has suffered from abnormal discharges that is likely to transmit scarlet fever to others following release from quarantine.

SUMMARY

1. Among 4,315 scarlet fever patients released from the hospital between Jan. 1, 1932, and July 6, 1933, there were 190 known vectors responsible for secondary cases of scarlet fever. Undoubtedly there were many other instances not disclosed by our investigation.

2. Of the 4,315 scarlet fever patients released, 620, or 14 per cent, were adults and fourteen of these were known vectors (tables 1 and 2).

3. Of the 190 known vectors, 150 (79 per cent) were nonsuppurative, whereas but forty (21 per cent) had suffered from suppurative processes.

4. The 190 known vectors were responsible for 282 secondary cases.

5. Fourteen per cent of the total releases were adults and 7 per cent of the 190 known vectors were adults. One out of every forty-four adults at the termination of quarantine transmitted scarlet fever to a susceptible. With children, one out of every twenty-nine under similar circumstances was responsible for secondary cases.

CONCLUSIONS

1. We have demonstrated that the patient who has had uncomplicated scarlet fever, contrary to the opinion often expressed, may be as dangerous to the community following release from quarantine as the patient who has suffered from abnormal discharges during the acute attack.

2. On the basis of our data we believe that the adult patient who has suffered from scarlet fever cannot be regarded as a negligible factor in the transmission of the disease following his release from quarantine.

TABLE 2.—*Cases According to Groups*

	Total Number of Patients Discharged From Hospital	Number of Cases Transmitting Scarlet Fever After Release From Hospital	Infectivity Rate, per Cent	Number of Secondary Cases	Secondary Case Rate, per Cent
Group 1: Four weeks quarantine period	1,454	62	4.26	82	5.6
Group 2: Three weeks quarantine period	500	35	7.00	59	11.8
Group 3: Quarantined until nose and throat cultures were negative	272	8	2.94	9	3.3
Group 4: Three weeks quarantine period if nose and throat cultures were negative, otherwise four weeks	2,089	85	4.07	132	6.3

3. The number of secondary (return) cases of scarlet fever bears an inverse ratio to the length of the quarantine period and is not dependent on seasons.

4. The secondary case of scarlet fever contracted from one of a mild type is frequently characterized by unusual severity. The converse is also true.

5. It is our opinion that the spread of scarlet fever cannot be effectively controlled by the methods of quarantine now in general use. The morbidity and mortality of scarlet fever, as well as that of diphtheria, can never be reduced to a satisfactory level without resorting to thorough and systematic methods of active immunization.

3026 South California Avenue.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LUCCHESI AND BOWMAN AND DRS. HOYNE AND BAILEY

DR. JOHN A. TOOMEY, Cleveland: Drs. Lucchesi and Bowman advocate the use of antitoxin because their treated patients did not have fever as long as the untreated and the complications were less in the former group. They compare 3,045 patients who were given antitoxin with 2,332 who were not. The numerical difference between these two groups of cases is 713, or nearly 24 per cent, a differential that would have to be considered in the interpretation of their results. As far as the number of days of duration of fever is concerned, correction for such a differential would tend nearly to equalize the averages, thus robbing these statistics of some of their importance. One could hardly compare 257 nontreated with 800 treated severely ill patients and be justified in concluding that because the former had a complication rate of 52.79 per cent and the latter a complication rate of 26 per cent, scarlet fever antitoxin should therefore be used. If one is warranted in these conclusions, one must also logically conclude that, if there were more severely ill patients in the nontreated group, the complication rate would be greater or at least remain the same; but everybody knows that the more cases there are, the lower is the complication rate. I noticed that the authors recommended the early use of antitoxin, and yet I got the impression from their charts that the later they treated the patient the better were the results. The authors state that the reduction in fever after the injection of antitoxin is not outstanding in the mild or moderately ill group of scarlet fever patients. If this is so and since the authors aver that serum reactions tend to make the patient uncomfortable for at least three or four additional days, one wonders why it should be used in the milder cases. I have used antitoxin in treating the severely ill and toxic type of scarlet fever patient but have never been quite sure that it did much good. Drs. Hoyne and Bailey present statistics on the effect of various methods of quarantine on the number of scarlet fever cases that arise secondary to cases discharged from the hospital. The lowest infectivity rate was found in the group of uncomplicated cases isolated at least twenty-one days and whose cultures were negative before discharge from the hospital. In cases of the same group that showed complications, two negative cultures were obtained a week apart on blood agar medium. The infectivity rate here was 2.94 per cent and the secondary case rate for this group was 3.3 per cent. A striking point made by the authors is the fact that the majority of secondary cases arose not from patients who were discharged from the hospital with suppurative or open lesions but from those who had no complications whatever, thus demonstrating that the uncomplicated case of scarlet fever is often more likely to give rise to secondary cases than the complicated one. If this is true, it must follow that present criteria of infection and isolation are totally inadequate. I agree that the ultimate answer to the quarantine question lies in prophylactic immunization against the disease, but I think that much experimentation will have to be done before an immunization product is available the use of which can be pushed as a general public health measure. I doubt whether the mortality rate of the present mild type of scarlet fever will be much affected by any method of immunization.

DR. J. E. GORDON, Detroit: Drs. Hoyne and Bailey are to be thanked for emphasizing that patients convalescing from simple uncomplicated scarlet fever not infrequently transmit the disease. This often fails to receive the consideration it warrants. However, if one considers the kind of patient most likely to communicate scarlet fever to another person, that is another problem. Infecting cases have been distributed into three groups: those in which the course was uncomplicated, those with nonsuppurative complications and those with suppurative complications. Most of the infecting cases were in the group without complications, but so are most of the cases of scarlet fever. The essential problem is which of the three groups is relatively most likely to communicate scarlet fever infection and which requires the greatest precautions for adequate control of the disease. There are differences in the proportion of patients who tend to transmit the disease, dependent on the number and nature of the complications they have had. Not all active suppurative conditions are of equal danger. Patients who have had suppurative otitis media transmit the infection with about the same frequency as do those who did not have complications. Of course, they are restricted for longer periods of time. By contrast, I have found that patients with cervical adenitis and those with nasal or sinus infections constitute the most important problem. Dr. Toomey nicely emphasized the diagnostic difficulties associated with complications related to the nose. Drs. Hoyne and Bailey have reported a summer in which infecting cases were particularly frequent. Data over six consecutive years in Detroit have shown that the rate is generally lowest at that time. In one of the six years we had an increased rate during the summer, and most interest-

ingly that was followed by a greater prevalence of scarlet fever the next year, which duplicates the quoted experience. At present we are employing in Detroit an isolation period of two weeks for adults and three weeks for children. The infecting case rate is essentially the same as that reported here for the four weeks period; this year, about 4 per cent; the average for the three years it has been practiced, a bit less. Drs. Hoyne and Bailey stated in their conclusion that no known isolation plan suffices to control scarlet fever adequately. It would seem logical, then, to employ the shortest period that would give satisfactory results. Judged by the frequency of infecting cases, essentially as good results have been obtained in Detroit with these shorter periods as with the longer isolation for four weeks.

DR. P. F. LUCCHESI, Philadelphia: I must disagree with Dr. Toomey on several conclusions. He believes that the difference of 713, or 24 per cent, between the 3,045 patients who received serum and the 2,332 who did not, should not give our report a great deal of value. By the same token, he believes that 257 severe cases not treated with serum, with complications of 52.9 per cent, in comparison with the 800 serum treated cases of the severe type with a complication rate of 26 per cent, should likewise receive very little importance. If I may borrow Dr. Toomey's own method of conclusion, it would seem that if we increased the number, the small group of nonserum treated severe cases to 800, this would not account for the difference of twice the number of complications in the serum treated cases. There was a consistency in the lessening of the incidence of complications in the three groups. We performed a skin test in order to avoid anaphylactic shock and not to predict a serum disease. I have seen several patients, however, in whom the skin test was negative but who were definitely positive or sensitive to the serum. At present we are not getting the same high incidence of serum disease that we got in the early days of antitoxin. This undoubtedly is caused by the more refined antitoxin used at present. I agree with Dr. Toomey that ephedrine or ephedrine and calcium salts have little effect in the incidence and prevention of serum disease. Dr. Toomey stated that he had the impression that we obtained better results in those cases in which the antitoxin was given later. We did not mean to create that impression. In the light of our present experiences I believe that Dr. Bowman and I are justified in concluding that scarlet fever antitoxin will be of value if used in the moderately or severely toxic cases. Dr. Gordon said something in favor of a two weeks quarantine period for adults and three weeks for children. In Philadelphia we practice the minimum of a thirty-day quarantine period, provided they have no suppurative complications. Our proportion of return cases is seldom over 3 per cent, and I think the reason for this is the keeping of our cases in the hospital for an average of thirty days. Last year, with more than 3,000 cases treated, the hospitalization averaged thirty-three days.

DR. ARCHIBALD L. HOYNE, Chicago: It is true, as Dr. Toomey infers, that in scarlet fever cases classed as uncomplicated there may actually be some complication not ordinarily disclosed by the customary examination made at the time of the patient's release. However, we do not feel justified in requiring that all scarlet fever patients undergo a roentgen examination in order to determine whether or not they may have an infected sinus. There seems to be no doubt that virulence is increased by rapid transmission of a disease from one patient to another. That probably explains why so many of the secondary cases are severe, although the disease is acquired from a mild case. This brings up the question as to what is meant by the term "mild." My understanding is not the same, apparently, as of many others. Frequently, if there is not a high death rate the scarlet fever is referred to as mild. The fact that the death rate is not high does not necessarily mean that the disease has been mild. The question of the secondary case of scarlet fever is in itself complicated and, in discussing it, it is difficult to tell what is meant. I feel that Dr. Gordon is in error in believing that we did not properly calculate what we intended to demonstrate. We did not attempt to draw any conclusions as to the infectivity rate of any particular class of patients. The infectivity rates that we showed here are based on the total number of patients discharged. The infectivity rate in no way referred to either the complicated or the uncomplicated cases as separate groups. It had to do merely with all the patients who transmitted the disease. Therefore, I still think that what we undertook to show we did show and that it is essentially correct. When quarantine is being discussed, there are different systems of figuring its duration. My belief is that, because of the difference in establishing the quarantine time, the minimum quarantine period in Chicago at present is less than the minimum period in Detroit.

ATYPICAL FLEXNER DYSENTERY

A PRELIMINARY REPORT OF THE JERSEY CITY EPIDEMIC

JOSEPH FELSEN, M.D.
NEW YORK
EMILIE V. RUNDLETT, M.D.
JAMES SULLIVAN, M.D.
AND
HAROLD GORENBERG, M.D.
JERSEY CITY, N. J.

The Jersey City outbreak is a repetition of incidents known with regard to bacillary dysentery since Shiga first described the causative organism in 1898 in Japan, and Flexner in 1899 in the Philippines. The outbreaks in the United States have been due almost entirely to the acid-producing type represented by the Flexner Y and Sonne strains. Though serologically and bacteriologically distinct, these organisms have many characteristics in common. The paradysentery strains of Castellani and similar organisms described by other investigators probably belong to this group and illustrate the heterogeneous nature of the dysentery bacillus. Nelson considers Castellani's paradysentery identical with Sonne dysentery. One of us (J. F.) recently described an outbreak of the latter disease in New York City, which was terminated a few months before the inception of the Jersey City epidemic. The similarity of the clinical, bacteriologic and immunologic features in these two outbreaks was so marked that they will be again referred to in this communication.

Widespread epidemics of bacillary dysentery have occurred in Europe and elsewhere since 1538. They have been encountered among the armies of almost every nation from the Crimean to the World War. These epidemics were based on well recognized hygienic and sanitary factors incident to warfare. Outbreaks in civilian life, however, in communities with presumed sanitary facilities, have also been common. The "asylum dysenteries" of England, the Flexner Y type of "summer diarrheas" in infants, the milk-borne and water-borne outbreaks in this country and abroad emphasize the belief that the disease is always endemic and that periodic outbreaks occur, often without any apparent laxity in sanitary regulations.

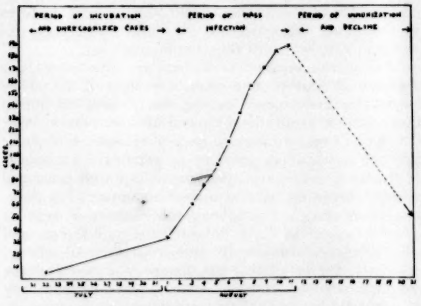
EPIDEMIOLOGY

The Jersey City outbreak began about July 21, when five children were stricken with dysentery. The early cases appeared in one quarter of the city, but others soon occurred elsewhere and by August 10 there were 184 reported cases. It was evident that the entire outbreak represented a contact infection, and further investigation revealed the fact that Flexner dysentery had been endemic in Jersey City for about one year. This was ascertained by referring to the clinical and laboratory records at the Medical Center. It appeared quite certain that sporadic cases kept the disease going, many

From the Medical Center, Jersey City, N. J.

of the milder cases probably having been unrecognized until enough susceptible contacts occurred to cause an outbreak. Many of the very early cases occurred in families. Thus, on July 23 five members in one family were involved with one death, a child aged 7. July 30, three members in a family were affected with one death, an infant aged 21 months. This was a prominent feature of the subsequent cases, in one instance all members of a family being confined to the Isolation Hospital at the Medical Center.

Of the total number involved up to the present, approximately 100 patients have been studied at the Medical Center. It is our impression that the true extent of the outbreak will never be accurately known, because many of the patients are not sick enough to seek medical attention. The same appears to be true for the surrounding communities. Only a careful cultural and serologic check up on an extensive scale will furnish accurate information in this regard. On August 10 one of us (J. F.) definitely diagnosed a case in New York City in a boy, aged 6, who had returned from the Catskills a few days before. He had been playing with two neighbor children, who were confined to bed with bloody diarrhea. Serologic and cultural studies were positive for the Flexner organism, as were cross studies against our Jersey City strains and serums. The one point we wish to stress from the epidemiologic standpoint is the importance of detecting the symptomless or mild cases. Cultures should be made on all contacts and the serum tested for the agglutination titer. Intramural hospital infections are common and may be avoided by isolating every newly admitted child and every adult with loose bowel movements, for forty-eight hours, until the presumptive tests have proved negative. This can be effectively carried out by making a culture



Jersey City outbreak of atypical Flexner bacillary dysentery. Total figures include only the reported cases. Note rapid increase in incidence after the first ten days. Thirty-two cases reported in the first eleven days, 156 in the second eleven day period.

of the fresh stool on an Endo plate and setting up the suspected colonies against known immune serums. The patient's serum agglutination titer can be determined on the same day, but the results may be negative until the fifth or sixth day. The work of Conradi,[1] Wollstein,[2] Duval and Shorrer [3] indicates the important rôle played by the healthy carrier. Shiga, moreover, states that the carrier is the chief factor in the spread of the disease. In Japan, where the more toxic type of dysentery (Shiga) is prevalent, the disease is said to persist in the interepidemic period through the medium of healthy carriers, mild sporadic cases and convalescents. The rôle of domestic animals and flies is now being studied with the cooperation of Health Commissioner

1. Conradi: Festschrift für Robert Koch, Jena, 1903.
2. Wollstein, Martha: Studies from the Rockefeller Institute of Medical Research **2**, 1904.
3. Duval, C. W., and Shorrer, E. H.: Studies from the Rockefeller Institute of Medical Research **2**, 1904.

*Summary of Age and Familial Incidence and Symptomatology (100 Patients)**

Age Groups:	
Infants	15%
Adults	15%
Children	70%
Familial Incidence:	
Two in family	3
Three in family	2
Four in family	4
Six in family	1
Symptomatology:	
Vomiting	27%
Bloody and mucoid diarrhea	90%
Colic	50%
Prodromal symptoms: anorexia, lassitude	10%
No diarrhea	5%
Constipation following diarrhea	40%
Neurotropic:	
Herpes	13%
Convulsions	4%
Stupor	5%
Rigidity of neck	13%
Positive Kernig and Brudzinski signs	10%
Ankle clonus	2%
Positive Babinski	2%
Disease Types:	
Typical Mild	65%
Severe	15% to 20%
Neurotropic	13%
Appendicular	3%
Afebrile, asymptomatic	4%

* These figures are subject to slight inaccuracy owing to borderline cases. Some of the neurotropic group also fell in the severe type.

Salmon and the local Society for Prevention of Cruelty to Animals. It is known that dogs may contract dysentery, and we are now examining the diarrheal droppings on the streets of Jersey City. One of our patients had a sick cat for one week prior to the onset of his illness. Kruse and Bowman [4] have reported Flexner dysentery in monkeys, and Messerschmidt [5] has recovered the same organism from healthy rabbits. The dysentery organism persists for long periods in the soil, as illustrated by the outbreak at the Chalons military camp in 1889 [6] when troops occupying a site over an old latrine used by dysenteric soldiers the year previously contracted the disease.

Isolation of patients, careful handling of food and water supplies, thorough examination of all food handlers, adequate screening against flies and instruction in personal hygiene are necessary measures in controlling the spread of the disease. Hospital outbreaks have been reported in this country and abroad involving the Sonne as well as the Flexner organisms.[7]

CLINICAL ASPECTS

The statistical data concerning the hospitalized patients, nearly all of whom were at the Medical Center, are summarized in the accompanying table.

The majority of cases occurred in children, usually from the poorer quarter of the city. It is surprising,

4. Kruse and Bowman, cited by Castellani, Aldo, and Chalmers, A. J.: Manual of Tropical Medicine, New York, William Wood & Co., 1920.
5. Messerschmidt, cited by Lentz: Ztschr. f. Hyg. **41**, 1902.
6. Zinsser, Hans: Textbook of Bacteriology, New York, D. Appleton & Co., 1922, p. 715.
7. For general literature covering this subject see Felsen, Joseph, and Osofsky, A. G.: Sonne Dysentery, J. A. M. A. **103**: 966 (Sept. 29) 1934. Felsen, Joseph: Am. J. Digest. Dis. **1**: 297 (July) 1934.

however, to note the relatively large number of adults affected.

Typical, Mild Form.—The typical case was of the mild type. The incubation period was short, often only a few hours. There were no prodromal symptoms other than anorexia or slight lassitude. The onset was generally quite sudden with colic and profuse watery diarrhea, often greenish and foul, with bright red specks or fluid blood and mucus appearing after from twenty-four to forty-eight hours. In some cases there was vomiting, usually ascribed to "food poisoning." There was only a moderate pyrexia with a corresponding increase in pulse rate. The average patient looked very well and complained little or not at all. Often the patient would be brought to the hospital on the third or fourth day of illness and in a day or two the temperature would be normal. Very shortly thereafter, usually the same or the next day, the diarrhea ceased. In some of the positive cases the bowels were actually constipated after admission. At or about the sixth day the patients often clamored to be sent home and would have been were it not for the bacteriologic check up. Sigmoidoscopic examinations were made in a limited number of cases and revealed a reddened mucosa weeping bloody fluid and covered in patches with thick, yellowish gray mucus. Ulceration, when present, was very superficial and could be made out only by careful examination of the reddened, moist mucosa. Follicular hyperplasia was nearly always present and was noted as multiple small punctate elevations of the mucosa due to hyperplasia of the underlying solitary lymph nodules. It is interesting to note that some patients exhibited definite inguinal lymphadenopathy due to inflammation extending to the anorectal margin. Lymphatic drainage from this area is to the inguinal region. We include in this group a member of the intern staff who was handling the hospitalized patients and who had a brief attack of bloody diarrhea unaccompanied by any marked constitutional symptoms.

The mild form of the disease as encountered by us may be described as an acute inflammatory condition of the intestine, characterized by a bloody and mucoid diarrhea accompanied by colic, having a brief incubation period, of short duration and of a relatively nontoxic type. This definition coincides with that given by one of us for an identical clinical picture seen in Sonne dysentery.

Severe Type.—In some of the infants and younger children a severe form of the disease was encountered. The onset was sudden with headache, vomiting, colic, profuse bloody diarrhea and prostration. By the time the patients reached the hospital they were markedly dehydrated, acidotic and acutely ill. It is quite certain that some of the infants were saved only by the prompt hypodermoclyses and phleboclyses administered by the intern staff. In this form the pyrexia was often as high as from 104 to 105 F., and the duration of the disease was prolonged beyond the usual six day period. It may be noted in passing that some of the severe cases occurred in adults. Thus far the mortality in the severe type of the disease has been 2 per cent. We have not encountered any cases of sudden death as described by Harvey [8] and by Charles and Warren.[9] It is noteworthy that in the severe form there was an initial leukopenia with gradual return to normal or even a leukocytosis during convalescence.

Unusual Types; Neurotropic Type.—Some of our patients exhibited labial herpes and meningitic symptoms such as severe headache, violent emesis, convulsions, drowsiness or stupor. These were not infrequently accompanied by rigidity of the neck and positive Kernig and Brudzinski signs. These patients appeared to fall into a definite group. While herpes is generally conceded to be a virus infection, we were impressed by the constant association of this lesion with meningitic symptoms. The spinal fluid, however, was negative and the symptoms subsided after a few days. Several of these cases were admitted with a tentative diagnosis of meningitis. It is possible that this form of Flexner dysentery is caused by a neurotropic strain.

Appendicular Type.—Some of our cases were admitted with a diagnosis of acute appendicitis and, after observation, were transferred to the Isolation Hospital. The suggestive symptomatology is due to the mesenteric adenitis and lymphoid hyperplasia, which is often most marked in the ileocecal region. Nelson,[10] Clayton [11] and Felsen have described similar cases. These patients are apt to have a normal leukocyte count or actual leukopenia early in the disease.

Afebrile Type.—Some of our patients have been completely afebrile throughout their stay in the hospital, though bloody and mucoid diarrhea was present. These patients generally exhibit no noteworthy constitutional symptoms.

Asymptomatic Type.—A few adults and children have entered the hospital because of one or a few loose bowel movements without blood or mucus. Many of these cases undoubtedly exist as they have in other epidemics and medical attention is sought only because of the publicity incident to an outbreak.

CULTURAL, IMMUNOLOGIC AND ANIMAL STUDIES

We are studying many of the strains isolated thus far and the immunologic titers of the serums during the disease and convalescence stages. Discharged patients and contacts are now being recalled for further investigation. We have reproduced the disease in rabbits by intravenous inoculation of the Jersey City strains and recovered the organism in the feces. Toxin studies, serum and bacteriophage therapy and widespread vaccination of children are being initiated.

POSTMORTEM REPORT

One infant exhibited a general lymphoid hyperplasia of the small and large bowel, notably the ileum and ileocecal region. Peyer's patches and solitary lymph nodules stood out prominently. After fixation, the latter showed a peculiar central dimpling suggestive of early necrosis. There was a generalized mesenteric lymph node hyperplasia, which appeared to be most marked at the ileocecal angle and on the posterior aspect of the cecum. There were numerous superficial ulcerations of the mucosa with vascular congestion. Sections of the spleen revealed hyperplastic splenic lymph nodules surrounded by a prominent hemorrhagic halo containing many macrophages loaded with blood pigment. In places the connective tissue trabeculae were similarly outlined.

8. Harvey, E.: Lancet **1**: 190 (Jan. 28) 1933.
9. Charles, J. A., and Warren, S. H.: Lancet **2**: 626 (Sept. 21) 1929.
10. Nelson, R. L.: Sonne Dysentery, Am. J. Dis. Child. **41**: 15 (Jan.) 1931.
11. Clayton, F. H. A.: Lancet **1**: 391 (Feb. 19) 1927.

THERAPY

Flexner dysentery as we have encountered it is a self limited disease. Most of the patients received repeated doses of castor oil in order to favor elimination of the toxin, which is known to be excreted through the wall into the bowel lumen. In dehydrated cases, liberal phleboclyses and hypodermoclyses were given. Aside from these measures the treatment was essentially symptomatic. It is too early to report on the effects of specific therapy, as many of the patients enter the hospital on or about the third or fourth day of the disease and often are well in one or two days.

667 Madison Avenue.

A NEW DANGER IN DINITROPHENOL THERAPY

AGRANULOCYTOSIS WITH FATAL OUTCOME

SOLOMON SILVER, M.D.

NEW YORK

With the use of alpha-dinitrophenol reaching proportions that must astound and alarm even its enthusiastic advocates, it is felt that this report of another fatality following its administration should be published.

REPORT OF CASE

A woman, admitted to the Mount Sinai Hospital, May 26, 1934, had an irrelevant past history except for the fact that she had always been obese, averaging 250 pounds (113 Kg.). About one year previously her physician noted moderate hypertension. Two months before admission, after a careful physical examination by her physician, who found only obesity (265 pounds, or 120 Kg.) and hypertension (175 systolic, 100 diastolic), the patient was given sodium alpha-dinitrophenol in doses of one-half grain (0.03 Gm.) three times a day. This dose was gradually increased so that five weeks later the patient was taking 2 grains (0.12 Gm.) three times daily. Her weight at that time was 258 pounds (117 Kg.), a loss of 7 pounds (3.2 Kg.) since the use of the drug was begun. She then saw her physician and as he found no toxic symptoms he increased the dose of the sodium alpha-dinitrophenol to 3 grains (0.18 Gm.) three times daily, or 9 grains (0.54 Gm.) a day. It is to be noted that the largest dose taken by the patient was still within the safe limit recommended by Tainter in his publication; namely, less than 5 mg. per kilogram of body weight. This dosage was maintained for six days. At the end of this period the drug was discontinued because the patient complained of pain in the head and ears. There was no fever, excessive perspiration or skin rash. She continued to be up and about for two days after stopping the medication. The next day, four days before admission to the hospital, the patient complained of headache, fever, sore throat and progressive swelling in the right side of the neck. The next day her physician found an ulcerating lesion in the tonsillar fossae and a fever of 103.5 F. A blood count made at that time showed only 600 white blood cells per cubic millimeter. Of these, only 20 per cent were polymorphonuclear leukocytes, 10 per cent were monocytes and 70 per cent were lymphocytes. A diagnosis of agranulocytosis was made; liver extract was administered intramuscularly, and the patient was sent to the hospital, May 26.

At the hospital she was found to be very acutely ill. There was a yellow tinge to the skin (dinitrophenol), but the sclerae were not icteric. In addition to the ulcerating tonsillar lesion and the suppurating lymphadenitis below the right lower jaw, there was an infected callus of the sole of the right foot. The spleen was felt. During her hospital stay the patient's temperature varied between 104 and 105.8 F., the pulse rate between 120 and 140 beats per minute and the respiratory rate between 20 and 42 per minute. She was treated with liver extract intramuscularly and given two direct blood transfusions of 300 cc. each on May 26 and May 28. In spite of this, her condition became worse, pneumonia developed and the patient died, May 31.

A blood culture taken two days before death revealed the presence of Staphylococcus aureus.

May 26, Dr. Nathan Rosenthal reported the patient's blood count as follows: hemoglobin, 94 per cent; red blood cells, 5,520,000; platelets, 290,000; leukocytes, 1,440; segmented polymorphonuclears, 4 per cent; nonsegmented polymorphonuclears, 4 per cent; lymphocytes, 92 per cent. This, he stated, was the blood picture of agranulocytosis.

May 28, Dr. Rosenthal found: hemoglobin, 95 per cent; red blood cells, 5,370,000; platelets, 250,000; leukocytes, 1,500; segmented polymorphonuclears, 8 per cent; nonsegmented polymorphonuclears, 7 per cent; eosinophils, 1 per cent; lymphocytes, 78 per cent; monocytes, 6 per cent. He stated that this blood smear showed improvement over that of May 26.

The urine showed no bile, but urobilin was present. A faint trace of albumin was the only other abnormality. The blood pressure was 125 systolic, 90 diastolic. The blood Wassermann reaction was negative. Chemical examination of the blood revealed: sugar, 200 mg.; urea nitrogen, 68 mg.; calcium, 9.8 mg., and phosphorus, 3.3 mg. per hundred cubic centimeters of blood. The icteric index was 8 and the van den Bergh reaction was negative. The bilirubin content of the blood serum was 0.3 mg. per hundred cubic centimeters.

Postmortem examination was performed under the direction of Dr. Paul Klemperer who, among the conditions present, observed bronchopneumonia of all lobes of both lungs, severe degeneration of heart, liver and kidneys, cellulitis of the right side of the neck, necrotic ulceration of the plantar surface of the left foot, and obesity. From a consideration of the clinical history the diagnosis of agranulocytosis and bacteremia were added. Smears of the bone marrow made by Dr. Rosenthal showed evidences of hyperplasia of the marrow, such as is often seen in agranulocytosis.

The report by Hoffman, Butt and Hickey[1] is the only reference in the literature to a similar reaction to dinitrophenol, but as this is, so to say, buried in a paper dealing primarily with amidopyrine, I feel that more direct attention should be called to the rôle of dinitrophenol in the production of agranulocytosis.[2]

Although no causal relationship can be established between the use of dinitrophenol and this patient's death from agranulocytosis, it is felt that the rapidly mounting number of toxic and fatal cases following the drug's use should greatly limit its prescription, especially since we have been unable to convince ourselves at the Mount Sinai Hospital of its efficacy in weight reduction in a carefully controlled series of twenty-four hospital and outpatient department patients. These cases convinced us that dinitrophenol was of use only when combined with dietary restriction and that dietary restriction had to be continued after the therapy with the nitrated phenol had been stopped. In view of this and the fact that we are treating a relatively benign condition with a substance of undetermined toxicity, we have, for the present at least, discontinued the use of dinitrophenol in the hospital and recommend strongly that it be made available only on a physician's prescription.

Addendum: Since this case was observed I have heard of another death due to agranulocytosis following the therapeutic use of dinitrophenol by a middle-aged woman who had not been ill before the administration of the drug.

124 East Sixty-First Street.

From the Medical Service of Dr. B. S. Oppenheimer, Mount Sinai Hospital.

1. Hoffman, A. M.; Butt, E. M., and Hickey, N. G.: Neutropenia Following Amidopyrine, J. A. M. A. **102**: 1213 (April 14) 1934.

2. Since this report was prepared there appeared in THE JOURNAL, on July 28, page 249, the case record of another, but nonfatal, case of agranulocytosis after dinitrophenol observed by Dr. S. Stephen Bohn.

Clinical Notes, Suggestions and New Instruments

A MECHANICAL DEVICE THAT PRODUCES UNIFORM DISPERSION OF BLOOD CELLS IN THE DILUTING PIPET

W. RAY BRYAN, PH.D. AND W. E. GARREY, M.D., NASHVILLE, TENN.

A study of the reports of leukocyte counts reveals contradictions and discrepancies that are clearly the result of faulty technic. A systematic study has revealed that a significant source of error is the failure to obtain a uniform dispersion of blood cells in the diluting pipet, which is reflected in variations of the numbers of cells as well as in their uneven distribution over the field of the counting chamber. Errors of surprising magnitude in the widely used manual method of shaking the diluting pipet in one plane were revealed in our study, and they were even more marked with certain mechanical shakers known to have been used in a number of research laboratories. The extent of the errors due to the use of a mechanical shaker is illustrated in table 1, which records typical results when as many successive counts as possible (nineteen) were made from the contents of a single pipet. It will be noted that the range between the minimum count of 6,480 cells and the maximum of 11,480 cells is 5,000 cells, while the coefficient of variation of the counts is ± 12.8 per cent in a series with an arithmetical mean of 8,716. It should be stated that similar unreliable results were obtained whether the pipet was continuously shaken or reshaken between successive counts, although two drops were always "wasted" before a drop was admitted to the counting chamber.

TABLE 1.—*Dispersion of Leukocytes in the Diluting Pipet Obtained by Means of a Mechanical Shaker, Shakes the Pipets in Only One Plane* *

Order of Count	No. of Cells per Square Millimeter of Area									No. of Cells per Field (T)	Total Count per Cu.Mm. of Blood T(200/9)
	1	2	3	4	5	6	7	8	9		
1	40	50	37	43	38	44	44	67	47	410	9,100
2	33	60	57	42	42	41	51	39	42	407	9,040
3	50	36	36	50	37	43	36	49	47	384	8,520
4	45	41	51	53	42	47	29	59	59	426	9,460
5	52	52	56	39	33	41	46	35	44	398	8,840
6	33	32	46	35	38	35	54	41	41	355	7,880
7	63	49	40	35	53	52	58	41	48	439	9,740
8	39	45	53	47	47	48	38	43	40	400	8,880
9	47	52	38	48	46	57	58	48	65	459	10,200
10	40	42	60	50	32	39	41	53	68	424	9,420
11	59	42	43	36	38	58	37	42	38	393	8,720
12	41	46	62	43	37	42	42	48	44	405	9,000
13	41	39	40	32	43	37	32	49	31	344	7,640
14	48	40	36	23	36	47	57	41	42	370	8,220
15	40	54	40	31	47	30	39	48	43	372	8,260
16	48	40	44	60	54	68	30	54	89	517	11,480
17	43	37	33	27	34	37	44	44	50	349	7,740
18	55	28	36	27	29	29	50	26	32	292	6,480
19	32	36	44	31	33	36	33	33	37	315	7,000
	Arithmetic mean = 43.6 Range = 78 Coefficient of variation = ±23.92%									Arithmetic mean = 8,716 Range = 5,000 Coefficient of variation = ±12.8%	

* Showing the number of leukocytes on each square millimeter of area (of the fields of a counting chamber) obtained when as many counts as possible (nineteen) were made from the contents of a single pipet. Each total count is based on all the cells counted on one field, i. e., 9 sq. mm.

Potain, who devised the pipet with a bead in the bulb in 1862, specified the following method of mixing the cells: "Rotate the mélangeur around its axis and at the same time raise and lower its ends."[1] This technic, which was employed by Garrey and Butler in their recent studies, gives more consistent results than those obtained by either manual or mechanical shaking. The authors have devised a mechanical "rotor" which mixes the diluting fluid (Türks solution) and blood in the pipet by what is essentially the Potain method. The device materially increases the accuracy of the counts. In its simplest form it may be assembled in any laboratory, as shown in figure 1. It is constructed from a large wooden spool on which wire or solder filament is wound. The spool (A), which has a diameter of 3½ or 4 inches, is mounted on a shaft (B), which can turn on its axis by mounting through a bearing of brass tubing (C) at each end, the tubing being clamped (D) to the two uprights of a Jackson stand or any similar device. A pulley (E) on the shaft serves for a belt drive by an electric motor. The rotation of the spool must not be faster than 50 revolutions per minute; otherwise centrifugation of the cells will nullify the desired dispersion. Proper gearing is therefore essential. A satisfactory speed (42.8 revolutions per minute) has been obtained with an alternating current induction motor provided with the desired reducing gear (35 to 1) made by the Bodine Electrical Company (Type Car.-2).

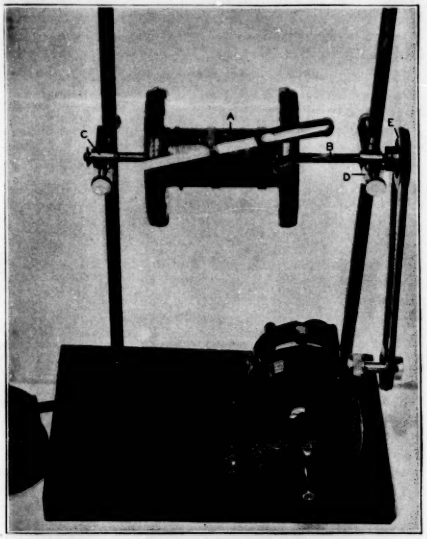


Fig. 1.—Simple rotor. A large spool rotated from 40 to 50 revolutions per minute by a motor with reducing gear and pulleys of proper ratio gives uniform dispersion of leukocytes in the pipet, which is attached at an angle to the axis of rotation. Lettering is described in the text.

The flanges of the spool are notched at several points to receive the pipets, which are mounted in the notches at an angle of 15 degrees and held in place by small rubber bands. Leakage from the pipets is prevented by stretching over their ends a wide rubber band or by the use of a collar device, such as is used with hematocrit tubes or such as is furnished with the Haak diluting pipet.

Figure 2 shows an improved mechanical rotor, which was built in the Vanderbilt Medical School Apparatus Shop by M. Herblin. This rotor is equipped with spring clamps, which will hold any commercial pipet in place. Leakage is prevented by means of thick rubber disks, placed in cups at each end of the clamp.

The principle involved in the use of this apparatus is that, owing to rotation, the cells settle by gravity in all possible directions and in ever changing planes, while at the same time they are stirred by the figure of eight movements of the glass bead.

Table 2 shows the results obtained in a typical experiment when as many counts (nineteen) as possible were made from the contents of a single pipet, mixing of the cells being

1. Tigerstedt, Robert: Handbuch der physiologischen Methodik, Leipzig, S. Hirzel, 1913, B: II 2, part 5, p. 11.

accomplished by means of the rotor device. The total white counts in this case with an arithmetical mean of 8,284, a minimum of 7,960 and a maximum of 9,120 vary over a range of only 1,160 cells, with a coefficient of variation of ± 3.4 per cent as compared to a range of 5,000 cells and a coefficient of variation of ± 12.8 per cent already noted when a mechanical shaking device was used (table 1). The compared counts of tables 1 and 2 were made from two pipets that were filled at the same time from the same sample of blood. A graphic representation of the distribution of cells on the fields of a hemocytometer is shown in figure 3.

TABLE 2.—*Dispersion of Leukocytes in the Diluting Pipet Obtained by Means of a Mechanical "Rotor"* *

Order of Count	No. of Cells per Square Millimeter of Area 1	2	3	4	5	6	7	8	9	No. of Cells per Field (T)	Total Count per Cu.Mm. of Blood T(200/9)
1	34	53	41	45	47	44	42	39	48	393	8,720
2	46	41	41	35	41	31	41	49	40	365	8,100
3	45	48	35	41	46	34	34	47	45	375	8,320
4	31	33	38	45	30	50	45	43	47	362	8,040
5	46	47	39	38	42	43	36	47	47	385	8,540
6	41	42	41	36	41	46	43	37	37	364	8,080
7	46	41	47	46	44	45	46	51	45	411	9,120
8	40	37	39	44	50	40	41	41	35	367	8,140
9	40	44	45	37	49	40	39	38	45	377	8,360
10	34	48	37	40	37	42	42	37	44	361	8,020
11	38	45	37	37	48	47	38	46	41	377	8,360
12	39	47	42	36	41	42	49	44	35	375	8,320
13	36	37	43	48	41	45	45	48	35	378	8,400
14	41	36	47	44	40	41	38	49	36	372	8,260
15	34	45	34	38	45	50	40	35	46	367	8,140
16	38	42	38	44	46	44	32	43	40	367	8,140
17	41	45	41	42	32	42	46	49	41	379	8,420
18	37	48	34	46	42	34	45	34	39	359	7,960
19	39	40	44	42	38	34	37	42	43	359	7,960
	Arithmetic mean = 41.4 Range = 23 Coefficient of variation = ±11.8%									Arithmetic mean = 8,284 Range = 1,160 Coefficient of variation = ±3.4%	

* Showing the number of leukocytes on each square millimeter of area (of the fields of a counting chamber) obtained when as many counts as possible (nineteen) were made from the contents of a single pipet. Each total count is based on all the cells counted on one field, i. e., 9 sq. mm.

If the pipet is placed in the rotor immediately after the sample is taken and diluted, from five to ten minutes is sufficient to give an even dispersion of cells. However, if for

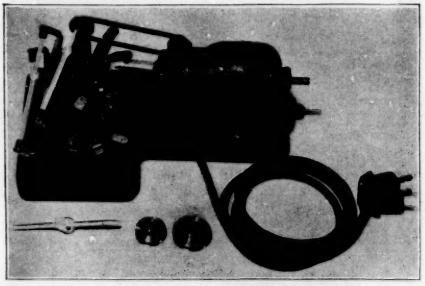


Fig. 2.—Improved form of rotor shown in figure 1. Extra pulleys to adjust the speed of rotation to about 50 revolutions per minute are shown. Described in text.

any reason the pipets must be kept for a while before the counts are made, thus allowing the cells to settle out, they may still be counted with the same degree of accuracy by being rotated for at least twenty minutes prior to the making of the counts. White blood cells begin to disintegrate after about twenty-four hours when diluted with Türk's fluid, but pipets may be allowed to stand for from twelve to eighteen hours and still may be counted with the same degree of accuracy as if counted immediately.

A statistical analysis of the results that we have obtained with this apparatus on more than 2,000 white cell counts is in progress and will be published subsequently, together with a study of other factors that influence the accuracy of the leukocyte count.

The distribution of red blood cells on the fields of a hemocytometer is likewise more uniform when the rotor device is used; however, certain precautions are necessary in the use

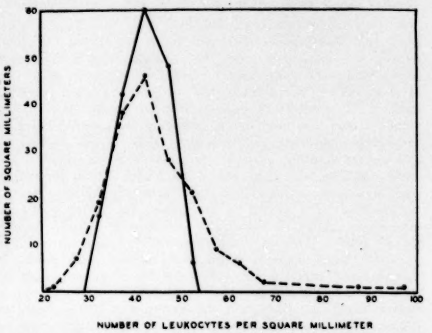


Fig. 3.—Frequency polygons, showing the variation in the number of cells in each square millimeter area of the fields of a counting chamber when as many counts as possible were made from the contents of a single pipet. The solid line shows the variation obtained when the cells in the pipet were mixed by means of the mechanical rotor (figs. 1 and 2). The broken line shows the more scattered results obtained when a pipet, which was filled from the same sample of blood, was shaken in a mechanical device which shakes in only one plane. Areas of 171 square millimeters (nineteen fields of a counting chamber) were counted in the case of each pipet.

of the diluting fluid. As formerly pointed out, Hayem's fluid develops a precipitate and after standing "should not be used in the case of blood samples which contain increased amounts of fibrin." [2] In our experience a large percentage of normal blood samples clump in the rotor device if Hayem's fluid is more than two or three weeks old, or if the fluid contains an excess of corrosive mercuric chloride. Freshly prepared Hayem's fluid gives excellent results. The tendency to clumping of the cells, due to the diluting fluid, is manifest in the case of the rotor device by balling up of the cells into clumps visible to the naked eye, so that they cannot be counted. In case the pipet is vigorously shaken the clumps are smaller, even microscopic, and, while the cells may be counted, accuracy of the results is nevertheless materially reduced. Other diluting solutions are being investigated.

SUMMARY

The mechanical device (rotor) and technic described add materially to the accuracy of the leukocyte count, give a greater constancy to the number and uniformity of distribution of these cells on the ruled field of the counting chamber, and permit repeated leukocyte counts of samples from a single pipet, even from twelve to eighteen hours after the dilution of the subject's blood has been prepared. Red cells may likewise be counted with greater accuracy, provided certain precautions are adhered to in preparation and use of the diluting fluid.

Vanderbilt University School of Medicine.

2. Tigerstedt: Handbuch der physiologischen Methodik, p. 15.

Judicious Blending of Science and Art.—One of the greatest problems of those engaged in the practice of medicine, is the judicious blending of the science and the art. After all is said and done, there is no antagonism between the science of medicine and the art of medicine and the most successful practitioner is he who most judiciously fuses them.—Blumer, George: Some Discursive Remarks on Bedside Diagnosis, *Yale J. Biol. & Med.* **6**:571 (July) 1934.

Special Articles

THE EPIDEMIOLOGY OF AMEBIASIS

CLINICAL LECTURE AT CLEVELAND SESSION

CHARLES F. CRAIG, M.D.
Professor of Tropical Medicine and Head of the Department of Tropical Medicine, Tulane University of Louisiana School of Medicine
NEW ORLEANS

The papers by Drs. Craig and Simon in this issue are part of a series of clinical lectures on amebiasis read at the Cleveland session. The other five papers, by Dr. Meleney, Dr. Magath, Drs. Chesley and McCoy, Dr. Reed and Dr. Lynch, will be published next week and the week following.

In order to understand the epidemiology of amebiasis it is essential that one have a clear conception of the life history of the cause of the infection, Endamoeba histolytica. This organism belongs to the protozoa, or unicellular animals, and has three stages in its life cycle, a vegetative stage, during which it is known as a trophozoite; a precystic stage, and a cystic stage. It is essentially a tissue parasite, living in the tissues of the intestine of man, or elsewhere in the body, but also capable of life in the lumen of the bowel for a limited period of time at least. In the tissues of the intestine and in other tissues the amebas occur as motile trophozoites, and cysts are not formed in the tissues. In the feces during attacks of diarrhea or dysentery they occur also as motile trophozoites, although in very rich infections cysts may also be found in such stools, but usually the precystic and cystic forms are found only in semiformed or formed stools. In the motile forms, reproduction occurs by simple division of the trophozoite into two amebas; no reproduction occurs in the precystic forms, while in the cysts the nucleus divides into four nuclei, cysts being found in the stools containing from one to four nuclei, the fully developed cyst having four. These cysts are the transmitting agents of the infection, as they are capable of resisting the gastric juice when swallowed in infected food or drink, while the motile forms are destroyed by the normal gastric secretion and hence are not infective. The cysts when swallowed pass unchanged through the stomach and greater portion of the small intestine, and in the lower portion of the ileum and the upper portion of the large intestine liberate a four nucleated ameba, which, after a complicated series of nuclear changes, divides into eight small amebas, which may invade the tissues or encyst and be passed in the stools of the host.

The methods of transmission of amebiasis depend on the fact that the cysts are the transmitting agents and that man becomes infected through the ingestion of food and drink contaminated by feces containing these cysts. As the cysts are seldom passed in any number in the stools of patients having acute diarrhea or dysentery, such patients are usually not infective, but it is the individual who is convalescent from dysentery, or who is apparently healthy or suffers from indefinite gastrointestinal symptomatology, who is a source of infection to those about him, as the cysts occur in semiformed or formed stools in large numbers. As in practically all untreated or improperly treated cases of amebic diarrhea or dysentery the cysts of this parasite are passed in the stool, it is evident that all such individuals become potential sources of infection, and the same is true of all individuals who harbor this parasite, regardless of the presence or absence of symptoms.

Amebiasis may be transmitted to man through a water supply polluted by feces containing the cysts of Endamoeba histolytica, through the use of human excreta in the fertilization of garden truck, through the handling of food by individuals who are excreting the cysts, and through the droppings of flies and perhaps other insects that have fed on infective material.

The transmission of amebiasis through a contaminated water supply is most apt to occur in rural regions where soil pollution is practiced and wells and springs are used as a source of water. It is probable that a large part of the incidence of this infection in country districts is due to contaminated water, as the cysts of this parasite will live in water for days, and even weeks, as proved by many authorities. That widespread infection with amebiasis may also occur in cities through a contaminated water supply has recently been demonstrated by the outbreak of amebic dysentery traced to contaminated water in certain hotels in Chicago, where, although food handlers undoubtedly played a part in the transmission of the infection, the water supply was apparently the chief factor in the transmission of the parasite. In this unique epidemic of amebic dysentery, defective plumbing and cross connections between the water supply of the hotels and the sewer were apparently responsible for extensive pollution of the water supplied the guests, with consequent transmission of the infection, although some transmission must have occurred through food handlers, as many of those employed by the hotels were found to be carriers of endamoeba histolytica.

Infection of man with Endamoeba histolytica is, under certain conditions, caused by polluted water; but infection from this source will not occur in localities where there is a properly impounded and filtered water supply unless this supply is polluted after leaving the filtration plant. It should be remembered, however, that the treatment of water with chlorine in order to kill disease-producing organisms is useless so far as amebiasis is concerned, for it has been repeatedly shown that the quantity of chlorine necessary to kill the cysts of Endamoeba histolytica is practically a hundred times greater than that used in water sterilization and that this agent cannot be used for this purpose. Boiling affords the only practical method of rendering water safe that has been contaminated with the cysts of this parasite.

Transmission of amebiasis through the use of human fecal material in the fertilization of truck gardens is a common method of transmission of the infection in the Orient, but even in this country this practice is not unknown and may be a method of transmission. The cysts of Endamoeba histolytica will remain alive in moist fecal material for as long as two weeks, and if this material is used in fertilization, and the vegetables so fertilized are eaten in an uncooked condition, it is obvious that there is great danger of the transmission of amebiasis in this manner.

The most common method of transmission of amebiasis, in otherwise well sanitated regions, is through the contamination of food and drink by food handlers

Read before the General Scientific Meeting at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 12, 1934.

who are carriers of this parasite. Although recently there has been an effort made to minimize the danger of infection in this manner, it remains an incontrovertible fact that in cities and towns having an impounded and filtered water supply, and where sanitation is otherwise excellent, infected food handlers employed in hotels, restaurants, lunch counters and other public eating places are the chief source and transmitters of amebic infection. While the cysts of this parasite die rapidly after drying, and while the recent experiments of Spector and Buky [1] show that within ten minutes the cysts have perished after drying on hands experimentally soiled with feces containing them, this period is amply sufficient to infect food if the individual handles it directly after leaving the toilet. The transmission of this infection by food handlers who are uncleanly is practically a certainty unless the greatest care is taken regarding personal hygiene and the cleanliness of the hands, and it has been found that the incidence of this infection in food handlers employed in public eating places is often excessive, owing to their close association and the constant intake of cysts in the food that they themselves contaminate. There are many instances of record in which one infected food handler apparently infected many others in the same institution, and there is nothing more common than to find several members of a family infected if one member has been demonstrated to harbor the parasite. I have records of several families in which every member showed infection, and the infection could be traced to a cook who harbored the parasite. The infected food handler must still be regarded as the principal source of infection with amebiasis wherever the water supply is beyond suspicion, and even in regions in which water may be a potential source of infection a large part of the amebiasis present will have originated from infected individuals engaged in the preparation and handling of food.

The contamination of food and drink by the droppings of flies is sometimes a method of transmission where flies are very plentiful and have access to fecal material. The cysts of Endamoeba histolytica remain viable in the intestine of these insects for as long as forty-eight hours, during which time the droppings of the insect contain them, and food may be thus contaminated. It is impossible to say just how important this method of transmission may be but, under certain conditions, as in military operations or large construction problems where many men are collected together, fly transmission may become a very important method of transmission.

The question of the possible existence of strains of Endamoeba histolytica differing in virulence is one that deserves consideration, and recently Meleney and Frye [2] have brought forward some evidence favoring variations in virulence of certain strains of the parasite with which they have infected kittens. While the theory of variations in virulence in strains of Endamoeba histolytica is an attractive one and one that would explain some of the puzzling differences observed in the symptoms attending human infection, it must be admitted that up to the present time such evidence as is available is not sufficient to offset the results of the many investigations which have apparently demonstrated that there is no difference in virulence between strains of this parasite isolated from symptomless individuals and those suffering from severe attacks of amebic dysentery. The only successful experiments in the production of amebic dysentery in human volunteers, those by Walker and Sellards,[3] were obtained by feeding cysts of Endamoeba histolytica obtained from symptomless carriers of the parasite. It is probable that the explanation of the variations in the severity of the symptoms produced by Endamoeba histolytica in man depends on the number of cysts ingested and the resistance of the individual rather than on differences in virulence of the parasite, although further work needs to be done along this line before such differences in virulence can be denied.

While under ordinary conditions the symptom complex of amebiasis known as amebic dysentery usually occurs in the form of sporadic cases, it may occur in epidemic form if conditions as regards lowered resistance or massive dosage of cysts are present. The epidemic occurrence of amebic dysentery was observed repeatedly among troops operating in the field in the Philippines, when resistance was lowered by the conditions present in active field operations and constant reinfection by swallowing numerous cysts in highly polluted water occurred. The recent outbreak of amebic dysentery contracted in certain hotels in Chicago is another instance of the epidemic occurrence of this condition when massive infection is possible. However, it is most unusual to encounter epidemics of this type of dysentery, and it is well to remember that the vast majority of cases of amebic dysentery occur sporadically and in this feature differ from bacillary dysentery, which very frequently occurs in epidemic form.

As regards climate, ambiasis is not a tropical disease, and its most serious manifestation, amebic dysentery, occurs throughout the world, although more frequently observed in the tropics because of greater chances of heavy infections and the lowered resistance of the inhabitants. It is true that heat and humidity appear to favor the development of symptoms in individuals harboring Endamoeba histolytica and that removal of patients suffering from amebic dysentery to a cool climate is generally followed by a marked improvement in their condition; but this is believed to be entirely due to the increase in the resistance of the individual following the stimulating effect of the change to a cooler climate.

There is no good reason for believing that this infection even originated in the tropics or subtropics, for Endamoeba histolytica has been found wherever it has been looked for, and the first case of amebic dysentery ever described was in a resident of St. Petersburg, Russia, who had never been in the tropics. It is also true that amebiasis and amebic dysentery have been occurring in the United States for many years and that the impression which some physicians have that this is a recently introduced infection is far from the truth. It is probable that amebiasis has always been present in this country but has been unrecognized, and careful observation will certainly demonstrate that it is much more prevalent than has been believed.

1. Spector, Bertha K., and Buky, Florence: Viability of Endamoeba Histolytica and Endamoeba Coli: Effect of Drying, Pub. Health. Rep. **49**: 379 (March 23) 1934.

2. Meleney, H. E., and Frye, W. W.: Studies of Endamoeba Histolytica and Other Intestinal Protozoa in Tennessee, Am. J. Hyg. **17**: 637 (May) 1933.

3. Walker, E. L., and Sellards, A. W.: Philippine J. Sc. **8**: 253, 1913.

So far as its epidemiology is concerned, it differs but little from that of the epidemiology of most infections contracted through infected food or drink, and the measures that have been found successful in preventing infection with these diseases will prove equally effective in combating amebiasis. The first essential is the recognition by the physician and public health officer that this infection is a prevalent one in this country, with a thorough understanding of its nature and the methods of transmission.

THE CLINICAL DIAGNOSIS OF AMEBIASIS

CLINICAL LECTURE AT CLEVELAND SESSION

SIDNEY K. SIMON, M.D.
NEW ORLEANS

From a clinical point of view, the most characteristic feature of amebiasis is embodied in the wide variability of its manifestations. The course pursued by the disease exhibits a symptom complex of highly diverse and changeable character, ranging in varying degrees of severity from attacks of a virulently acute fulminating colitis, such as occurred in the Chicago episode of 1933, to mild and all but negligible forms of bowel derangement. Moreover, fairly extensive lesions are found to occur along the intestinal tract without producing any striking symptoms or positive evidence of their presence. The first detailed description of the condition was undertaken by Councilman and LaFleur [1] in 1891 under the title of amebic dysentery. This designation is now regarded as not sufficiently accurate and in many respects as misleading, in view of the present knowledge that the occurrence of typically dysenteric as well as other intestinal phenomena comprises only a relatively small part of the composite picture of an amebic infestation. At least 50 per cent of individuals who harbor pathogenic amebas, in fact, never become cognizant of the presence of the organisms within the body. This group of so-called symptomless or healthy carriers nevertheless usually display some ill effects of their infection, even though slight. Indeed, invasion of the structures of the body by Endamoeba histolytica constitutes a definite clinical as well as pathologic entity, irrespective of whether manifestations are present or not.

ETIOLOGIC FACTORS

The cause of the variable degrees of severity exhibited by the disease and the inconstant and irregular character of the clinical picture as a whole may be ascribed to one or more of several contributory factors: 1. The site of location of the active pathologic lesions in the colon as well as the total area of bowel involvement are both factors of considerable clinical importance. In general, the nearer the lesions invade the region of the rectum and sigmoid, the more manifest are the intestinal symptoms. 2. The numerical concentration of cysts of Endamoeba histolytica present in contaminated water or food supplies furnishes a source for the rapid development at times of a virulent type of infection. Such conditions are encountered most often in military units but may also occur in civilian groups when insanitary living facilities prevail, as was the case in the recent Chicago outbreak. 3. An incidental bacterial infection superimposed on an amebic invasion of the bowel often gives rise to complexities in diagnosis. This double or crossed type of infection involving most frequently organisms of the Bacillus dysenteriae group serves to intensify and at times to mask the true picture of amebiasis. 4. The reaction of the human host to the invasion of the pathogenic amebas, in this as in other infectious processes, determines in great part the degree of severity and the clinical tendencies displayed by the disease. A relative as well as an absolute immunity is manifested in amebiasis, notably in certain racial strains as well as under varying circumstances of prolonged exposure to the infection, climate, age, sex and physical fatigue. 5. The varying changes of morphology that the organisms undergo during the evolution of their life cycle within the tissues exercise a measurable influence on the clinical phases of the disease. These changes range from the stage of motile activity of the vegetative cycle, accompanied by further tissue invasion and necrosis, to the stage of encystment wherein the organism is rendered completely innocuous to its original host.

CLINICAL GROUPS

These fundamental predisposing factors, briefly surveyed, afford an insight into the changeable conditions that surround the clinical course of amebiasis. The kaleidoscopic picture can be outlined best, it would seem, by a division into several more or less well defined clinical groups, as follows: 1. Acute fulmination amebic colitis, which originates, as a rule, spontaneously from a definitely traceable source of infection. These cases appear commonly in virulent epidemic form and yield a high rate of mortality. 2. The relapsing stage of chronic intestinal amebiasis. Acute and subacute sporadic attacks occurring in this group seldom attain the high degree of intensity observed in the primary or epidemic type. 3. Chronic amebic colitis exhibiting active clinical phenomena over a period of several months or years. During the prolonged clinical course, intercurrent attacks of dysentery or diarrhea as well as other manifestations appear, which alternate with irregular periods of quiescence. 4. The nonactive or latent type of infestation with Endamoeba histolytica, which includes the relatively large numerical group of innocent carriers of the infection. These individuals, while they do not display outspoken evidence of their infection, nevertheless in most instances exhibit certain departures from normal health standards. 5. A group of atypical clinical conditions not associated with disturbances of bowel function but none the less traceable in origin to the presence of pathogenic amebas within the structures of the body.

ACUTE AMEBIC COLITIS

Experimental investigations in lower animals have demonstrated that infection of the colon with Endamoeba histolytica does not bear any constant relationship to the time of onset of clinical symptoms. The period of incubation in man likewise remains uncertain

Read before the General Scientific Meeting at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 12, 1934.

1. Councilman, W. T., and LaFleur, H. A.: Johns Hopkins Hosp. Rep. 2: 393, 1891.

and from the clinical side can rarely be determined with any degree of accuracy. As far back as 1913, Walker and Sellards [2] were able to carry out experimental tests with twenty volunteer prisoners in the Philippine Islands, who were made to swallow fecal material containing cysts of pathogenic amebas. Of these, eighteen were successfully parasitized with the organisms. Subsequently, in four of these eighteen individuals, or approximately 22.2 per cent, typical symptoms of intestinal amebiasis developed. The incubation period of these four cases turned out to be twenty, fifty-seven, ninety-five, and eighty-seven days respectively, yielding an average of 64.8 days for the series. As far as I have been able to learn, no subsequent series of human tests of this character have been carried out. In the recent Chicago outbreak, virulent symptoms developed in several patients within two weeks following their exposure to the infection. The source of the infection proved to be a contaminated water supply, which, while comparatively free of bacterial organisms, contained vast numbers of the cysts of Endamoeba histolytica.

The onset of an attack of acute amebic colitis is usually quite sudden but may be preceded by a diarrhea of a few days' standing. In the fulminating types, the bowel evacuations rapidly assume a mucoid and bloody appearance and are accompanied by a marked degree of tenesmus. The rectal straining along with frequency of the stool passages advance to a state that compels the patient to remain more or less constantly on the bed pan or become "glued to the pot," as the English express it. Abdominal cramps precede and accompany the appearance of the dysenteric stools. Evidence of constitutional toxemia sets in at an early stage, so that the patient is frequently transformed from good health into a virulently ill individual within a few hours. The range of temperature varies but from the onset may assume an elevation from 103 to 105 F. Marked physical prostration with mental hebetude completes the picture of the rapid absorption of toxic bodies from the highly inflamed and, in some instances, gangrenous bowel surfaces. Death may ensue within the first few days of the onset, but in cases showing a favorable outcome improvement becomes evident about the fourth or fifth day of the illness. Microscopic examination of the evacuations reveals the presence of desquamated epithelium, large phagocytic cells, red blood corpuscles and leukocytes, in addition to the motile vegetative amebas. During the initial period of the acute attack, amebas, however, may be found missing from the stool even after careful search has been made. This constitutes a point of great importance, especially in fulminating cases, since a positive diagnosis of amebic infection must be withheld until the specific organism can be demonstrated in the dejecta. Further confusion is entailed in this respect because of the close similarity that obtains between the clinical characteristics of acute bacillary dysentery of various strains and acute colitis of amebic origin. Cross infections occur quite frequently and are probably always the rule in fulminating amebiasis. In four cases reported by Lund and Ingham [3] with fatal termination, pathogenic amebas were discovered in the bowel only at autopsy, though repeated stool examinations had previously been conducted. Weinberger [4] recently recorded two cases of acute bacillary colitis in which vegetative endamebas were subsequently found two and one-half months after the onset of the illness. When doubt exists regarding the presence of a double infection, most authorities agree that hypodermic medication with emetine hydrochloride is indicated tentatively to control the possible amebic involvement.

Fortunately, in the acute relapsing stages of a chronic amebic colitis, the protozoal organisms can be found in the feces more uniformly and with greater facility. The symptoms likewise fail to attain the degree of severity witnessed in the fulminating or primary type, except on rare occasions. Indeed, the dysenteric features may be absent entirely or may be replaced by a simple diarrhea. The frequency with which relapses occur in chronic amebic infection of the colon varies considerably. Indiscretions in diet, changes in atmospheric conditions and prolonged physical fatigue stand out as among the principal contributory factors in the production of acute or subacute outbreaks.

CHRONIC AMEBIC COLITIS

In the vast majority of instances, amebiasis of the colon is revealed as an essentially protracted infectious process, largely of undetermined origin and inception. A careful analysis of many case records will, however, disclose a history of mild degrees of clinical derangement long before the onset of the more typical intestinal disturbances. In one of my own cases presenting healed hepatic abscess, I was able to trace the amebic invasion back forty-three years. Large numbers of individuals infested with Endamoeba histolytica, as previously stated, fail to show any appreciable clinical evidence pointing to the presence of the organisms. On the other hand, the infection may light up quite suddenly into a highly acute form after having remained dormant for a long time. Even during the less active periods, however, the disease still carries harmful potentialities, since remote complication of serious character, such as hepatic abscess or perforation, may occur without the intervention of previous intestinal symptoms. The clinician should never be led into error by the uncertain or changeable course of the disease. Neither should a prompt subsidence of symptoms be regarded as evidence of recovery from the infection. In the past, many widely heralded cures have been recorded as a result of the employment of certain amebicidal agents. On further study, a large percentage of these prove to be mere examples of the conversion of the active symptom picture of the disease into one of relative quiescence. Indeed, the simple expedient of placing the patient in bed on a restricted diet will in many instances prove sufficient to allay the immediate irritable bowel disturbances.

Apart from the occurrence of intestinal manifestations, other clinical features are commonly found to be associated with a protracted state of infection induced by Endamoeba histolytica. The character of these disturbances consists, in the main, of functional neuroses of various kinds, digestive disabilities, secondary ane-

2. Walker, E. L., and Sellards, A. W.: Philippine J. Sc. sec. B **8**: 253, 1913.

3. Lund, C. C., and Ingham, T. R.: Four Fatal Cases of Unsuspected Amebiasis, J. A. M. A. **101**: 1720 (Nov. 25) 1933.

4. Weinberger, H. L.: Dysentery, J. A. M. A. **102**: 916 (March 24) 1934.

mia, loss in weight, physical fatigue, and a general impairment of bodily strength. As far as the digestive sphere is concerned, patients complain vicariously of anorexia or a capricious appetite, bad taste, acid eructations and heartburn, and occasionally nausea and vomiting. These symptoms may be traced for the most part to the presence of a particularly obstinate form of constipation, a condition that is quite common during the less active phases of amebiasis. Evidence of functional neuroses is frequently present in other organs of the body apart from the digestive tract. These are to be ascribed in great part to the absorption of toxins from the submerged areas of ulcerative lesions in the intestinal wall. Severe grades of anemia are rarely encountered in amebic infections, though the oozing of blood from the surface ulcerations, combined with the attending constitutional toxemia, is capable of producing a definite chloranemia. Changes in the number or character of leukocytes is rarely observed during the normal course of an intestinal amebiasis. When leukocytosis does occur, it indicates either the occurrence of a mixed infection with bacilli or a remote complication such as hepatic abscess, appendicitis or perhaps localized or general peritonitis. Loss in weight and the lowering of the health standard in general are phenomena not infrequently found in connection with the disease. In a series of 217 cases that I [5] studied a few years back there was an average loss in weight of 12 pounds (5.4 Kg.) covering the recognized period of duration of the disease.

CLINICALLY ATYPICAL AMEBIASIS

Unusual clinical types occur in amebiasis with sufficient frequency to justify a separate grouping. The chief characteristics of these cases lie in the fact that knowledge of the existence of an amebic infection of the bowel could scarcely have been obtained from the clinical history or the physical state of the patient. On the contrary, these are in many instances rather of a contradictory nature. Because of this, reliance for the diagnosis of all clinically atypical amebic infections must be placed on the detection of pathogenic amebas in the stool passages. This does not exercise any undue clinical hardship, however, since at the present time routine fecal examinations have become a necessary adjunct to every diagnostic study. In an article published in 1926 I [6] described in detail a group of unusual clinical types of amebiasis. Each of these cases presented, in turn, a perplexing clinical problem, previously unsolved and entirely apart from any disturbance within the intestinal tract.

The following comprise examples of the type of symptom complex one may encounter in cases of atypical amebiasis of the colon: pain of indefinite character localized in various sections of the abdomen; spurious appendical phenomena, which not infrequently have led to unnecessary operative intervention; pains of the boring or aching type in the lumbar and sacral regions not associated with orthopedic disability; low grade daily temperatures accompanied by marked physical fatigue which suggest low grade infectious states, as tuberculosis; persistent and unexplained loss of weight; secondary anemias of marked degree showing lack of therapeutic response; massive hemorrhage from the bowel without an explainable cause; attacks of nausea and vomiting, sometimes of long duration, without demonstrable etiology except the accidental discovery of amebic infestation of the colon. The clinical manifestations in such cases as have come under my observation have subsided promptly following the employment of amebicidal agents. In fact, the results in some instances have proved quite fantastic. Brown [7] has recently reported five cases of atypical amebiasis, yielding satisfactory therapeutic results, in which he lays particular stress on the responsibility of the clinician for maintaining a low "threshold of suspicion" in the search for amebic infestation.

DIFFERENTIAL DIAGNOSIS

In its purely clinical aspects, amebic colitis possesses a close similarity to a number of other disease conditions of the lower portion of the bowel. In the acute stage, confusion is frequently encountered in connection with the acute bacillary dysenteries, and acute ulcerative colitis of varied etiology, as well as certain types of acute enterocolitis arising from infectious or toxic sources. The differential diagnosis of chronic amebiasis is also beset with difficulty in some instances, principally in respect to certain ulcerative and infiltrative lesions of the upper and lower portions of the bowel, as follows: chronic bacillary dysentery, chronic ulcerative colitis due to a number of causative agents, carcinoma of the rectum and lower portion of the bowel, intestinal tuberculosis, recurrent acute and subacute appendicitis, chronic ileitis, sprue, pellagra and balantidiosis, in addition to flagellate infections of the bowel.

No attempt will be made to discuss the points of difference that distinguish these various clinical states. It suffices to comment, at present, however, on the all too frequent errors in diagnosis disclosed in the case histories of amebic patients. In earlier periods the recognition of amebic infestation was overlooked by a large percentage of the profession in spite of repeated warnings as to its universal distribution. Since wider knowledge of the disease and its possibilities has been attained in recent times, however, many intestinal lesions have been diagnosed as amebic in origin which have in fact no connection with the organism. During the past year I have myself encountered ten cases of carcinoma of the lower portion of the bowel that had been treated persistently for months for amebiasis. Again, it is not an uncommon experience to observe patients showing definite evidence of amebic ulceration of the bowel, who had undergone operations previously for hemorrhoids or other rectal lesions. The clinician has to be on guard, therefore, both in his failure to find the infection and in mistaking amebiasis for other conditions.

DIAGNOSTIC CRITERIA

In the ultimate analysis the diagnosis of amebiasis in the living subject must devolve on the detection of the specific organism in the bowel passages. Under no circumstances should reliance be placed on the clinical phenomena alone, no matter how suggestive they might prove to be. The discovery of vegetative or encysted endamebas may be accomplished either by direct micro-

5. Simon, S. K., in Tice, Frederick: Practice of Medicine **4**: 300.
6. Simon, S. K.: M. Clin. North America **9**:1045 (Jan.) 1926.
7. Brown, P. W.: A. J. Digest Dis. & Nutrition **1**: 10 (March) 1934.

scopic examination of specimens of the bowel evacuations or from cultures of the suspected feces. The latter plan of cultivating the organisms in specially prepared mediums has been perfected in more recent times, largely through the work of St. John.[8] This method, though it yields a high degree of diagnostic accuracy, unfortunately lies beyond the reach of the average practitioner of medicine. A similar disadvantage may be said to surround the complement test of blood serum, which was devised by Craig [9] and has been employed by him and others with great success in the diagnosis of ameba infested subjects.

The great problem in amebiasis, it would seem at the present moment, is to find ways and means to enable the great army of clinicians to recognize the disease more accurately and with greater facility than has obtained in the past. The scope of such a plan must necessarily center on the microscopic examination of the stools. Contrary to the opinion expressed by many laboratory workers, I do not believe that extensive technical training is needed for the recognition of pathogenic amebas either in the vegetative or in the encysted form. The ideal method is to have the clinician conduct his own examination of the feces with the patient directly at hand. If ambulant, he should be asked to bring the fecal specimen, whether formed or not, to the office. This is examined carefully for the presence of vegetative amebas or cysts. The following day the patient is required to take a saline cathartic and to appear for proctoscopic examination shortly after the appearance of the first watery bowel passages. Rectal examination through the proctoscope will reveal the presence or absence of ulcerative lesions of the lower portion of the bowel and at the same time afford an opportunity to procure scrapings of the bowel surface as well as specimens of the soft or watery stool for detection of the motile vegetative organisms. Repeated examinations are necessary in some cases before a positive diagnosis can be ruled out.

The character of the ulcerative lesions in amebiasis, as viewed through the proctoscope, can in no manner be considered pathognomonic. The more typical type presents a deeply punched out appearance, with ragged overhanging edges. The base of the ulcers is covered, as a rule, with a thick, yellow, purulent secretion. The ulcers and mucous surfaces of the bowel wall can be made to bleed readily by the slightest trauma. The proctoscope picture, it is well to remember, represents merely surface ulcerations and is not to be confused with the true pathologic lesions of the disease, which are infiltrative in character and are located chiefly in the submucosa. Moreover, in the vast majority of individuals who harbor E. histolytica, no visible evidence of the infection can be found by rectal examination.

The x-rays have been called into service to assist in the differential diagnosis of amebic infiltration and ulceration of the bowel wall as distinguished from other lesions in the colon. Marked thickening of segments of the colonic wall as well as deeper areas of ulceration can usually be detected readily by a radiologic examination. However, this cannot be made the basis for the diagnosis of specific amebic involvement when other clinical and laboratory signs fail.

1520 Aline Street.

8. St. John, J. H.: Am. J. Trop. Med. **6**: 319 (Sept.) 1926.
9. Craig, C. F.: J. Lab. & Clin. Med. **18**: 873 (June) 1933.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—*In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.*—ED.

THERAPY OF CARBUNCLE

Carbuncle is a deep seated intradermal staphylococcic infection, which differs from furuncle (q. v.) in being characterized by multiple foci of necrosis and terminating in gangrene. Because of radical difference of treatment, malignant pustule, or anthrax (q. v.), must be differentiated from carbuncle. Anthrax is characterized by the early formation of a blister and of a hard, black, painless and insensitive slough that becomes surrounded by a halo of vesicles, in the fluid of which smears show anthrax bacilli. History of exposure to infected animals or animal products may lead to suspicion of anthrax.

LOCAL TREATMENT OF CARBUNCLE

There is no use in wasting time with hot moist dressings. Possibly roentgen irradiation (300 roentgens, 140 kilovolts, with a filter of 0.25 mm. of copper and 1 mm. of aluminum) may be of value if the case does not seem ripe for radical treatment.

Surgical Treatment. — Crucial incisions are made, excepting in carbuncle of the lip, which is treated like furuncle of the lip (q. v.). Under general (not local) anesthesia and as soon as there is a point of softening, the indurated area is incised from sound skin to sound skin by crucial incisions clear through the derma and down to the deep fascia. The points of skin are raised with toothed forceps and the subcutaneous trabeculae are severed, thus undermining the skin to tap the collections of pus. The points of the skin flaps as well as all necrotic tissues are then excised to leave a wide opening for drainage and the extrusion of the slough. Pockets containing necrotic material that cannot well be excised are curetted. The cavity is then cauterized with Liquefied Phenol, which is removed after a minute by means of an alcohol-saturated tampon. The cavity is finally packed with iodoform gauze and hot boric acid dressings are applied. At change of dressing, instillation of Solution of Hydrogen Dioxide and irrigation with hot Physiologic Solution of Sodium Chloride may help in the separation of the sloughs. The ulcer remaining after the sloughs have been discharged is treated in accordance with general principles (see Therapy of Ulcers).

Magnesium Sulphate-Phenol Paste

℞	Dried magnesium sulphate	75.00 Gm.
	Liquefied phenol	10.00 cc.
	Glycerin	90.00 cc.

Mix in a hot mortar, with a hot pestle, and keep in a tightly covered jar to prevent absorption of moisture.

Label: Apply on lint to cover the whole of the affected area, and cover with a thick pad of absorbent cotton.

Analgesic Paste Dressing.—Until surgical treatment can be applied and when it is contraindicated, the magnesium sulphate-phenol paste dressing gives some relief

and, being hygroscopic, tends to convert the moist into dry gangrene. After the skin is defatted with ether, the paste, spread on lint, is applied to the whole area and covered with a thick layer of cotton. This dressing is removed at least every twenty-four hours, until the sloughs have separated.

SYSTEMIC TREATMENT

Absolute rest in bed and of the affected part is essential. Nutritious food should be given and morphine administered as required for pain (q. v.). Bowel and kidney function should be maintained. For diabetic patients, insulin therapy (q. v.) should be given energetically.

PROPHYLAXIS

For prevention of recurrence, the same methods are employed as in the prophylaxis of furuncle (q. v.).

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

BISMUTH SUBSALICYLATE (See New and Nonofficial Remedies, 1934, p. 116).

The following dosage form has been accepted:

Bismuth Subsalicylate with Butyn-D. R. L.: A 10 per cent suspension of bismuth subsalicylate-U. S. P. in peanut oil to which has been added 0.6 per cent butyn and metaphen 1: 20,000. Each cubic centimeter represents from 0.057 to 0.059 Gm. of elemental bismuth. The product is marketed in bottles containing 60 cc.

Prepared by the Abbott Laboratories, North Chicago, Ill. No U. S. patent or trademark.

PROCAINE-ABBOTT (See New and Nonofficial Remedies, 1934, p. 61).

The following additional dosage forms have been accepted:

Ampoules Procaine Hydrochloride Solution 10%, 2 cc., For Spinal Anesthesia: Each cubic centimeter contains procaine hydrochloride, 0.1 Gm., dissolved in distilled water.

Ampoules Procaine Hydrochloride Solution 2%, 5 cc.: Each cubic centimeter contains procaine hydrochloride 0.02 Gm., dissolved in physiologic solution of sodium chloride.

Procaine-Epinephrine Solution, 100 cc. Bottle: Each cubic centimeter contains procaine hydrochloride 2%, epinephrine 0.04 mg. ($\frac{1}{1,600}$ grain), sodium bisulphite 0.001 Gm., in isotonic solution.

Procaine Hydrochloride Hypodermic Tablets ½ grain.

Procaine Hydrochloride Hypodermic Tablets 3 grains.

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

ERYSIPELAS AND PRODIGIOSUS TOXINS (COLEY)

Sir James Paget is said to have first called attention to the occasional spontaneous remission of malignant tumors following attacks of acute febrile conditions, particularly erysipelas. As early as 1882 Fehleisen,[1] who discovered a streptococcus as the cause of erysipelas, employed living cultures in the treatment of cancer with beneficial results in some instances. In 1891 Lassar and Spronck[1] advocated the use of killed cultures, while in this country W. B. Coley published some observations on the action of viable streptococci in the treatment of sarcoma. The use of such preparations did not achieve widespread popularity, nor has it up to the present, in spite of the fact that many noteworthy cures have been reported in seemingly hopelessly inoperable cases. From its inception, however, Coley has pursued the method avidly and has published reports of extensive series of cases, as well as developing the combined toxins of B. prodigiosus and Streptococcus erysipelatis. The latter preparation was suggested by the observations of Roger,[1] who found that the toxins of the former materially enhanced the virulence of experimental erysipelas in rabbits. By 1910 the preparation "Erysipelas and Prodigiosus Toxins-Coley" had been sufficiently investigated to warrant its inclusion in N. N. R.[2] At that time it was estimated to effect a cure in from 4 to 9 per cent of cases of inoperable sarcoma. Under "Actions and Uses" in New and Nonofficial Remedies the following statement was made originally:

> It is therefore likely that the treatment of inoperable sarcoma with the toxins of erysipelas and B. prodigiosus leads to a cure in approximately 4 to 9 per cent of cases. And some results obtained so far suggest that this method of treatment may prove of value as a postoperative procedure in diminishing the number of recurrences, and that in a certain number of cases it might limit the necessity for amputation of the limb in cases of sarcoma of the long bones. As to its mode of action nothing definite can be stated, but it is likely that the toxins themselves, as well as the local and general reactions they produce, frequently affect the life of the sarcoma cells unfavorably.

This statement was revised to a more concise form, of the same import, in 1914 and has remained in N. N. R. for twenty years with no further change:

> Its use has been advised in cases of inoperable sarcoma. This remedy is said to have benefited and produced cures in a small percentage of cases treated, though there is some difference of opinion as to this.

Because of this relatively indefinite status of the product, it was deemed expedient at the time of its reconsideration this year to review the situation with a view to the elaboration of a more specific and explicit estimate of the therapeutic utility of the preparation and of its limitations. As is the case with many drugs, the determination of efficiency in terms of the proportion of successes to failures is most difficult, owing to the tendency on the part of students and investigators to report, predominantly, only the former.[3]

One of the earliest reliably recorded failures is a case of sarcoma of the scapula observed by Babcock and Pfahler,[4] wherein excision had been attempted four times with recurrence after each attempt. When, finally, the condition attained a frankly inoperable state the authors resorted to irradiation and certain of the therapeutic fancies then in vogue, such as trypsin, methylene blue and Doyen's serum.[5] Through all this the patient failed rapidly and the scapular mass attained the size of a "man's head." Seven days prior to death, huge doses of Coley's toxins were employed and probably served only to hasten the inevitable outcome. This case is typical of many of the reported failures in which the toxins of erysipelas and prodigiosus were instituted when the patient was moribund. In view of the prolonged treatment that has been employed in the successful cases, it is only reasonable to predict certain failure if the immediate temporal outlook for survival is not sufficiently long to allow of an adequate course of therapy.

Spencer[6] observed a case that well illustrates the point under discussion. The patient had a large inoperable mass of undetermined origin occupying the entire lower abdomen and infiltrating various viscera and the parietes, including the rectus muscle.[7] Biopsy, taken at operation, showed the tumor to be a spindle-cell sarcoma. Coley's toxins were employed in dosage of from one-half to three minims on alternate days for twelve doses with no apparent effect. The patient left the hospital very emaciated with a fatal prognosis, only to return two months

1. Cited by Loeb, Leo: The Treatment of Inoperable Sarcoma by Erysipelas and Prodigiosus Toxins, J. A. M. A. **54**: 262 (Jan. 22) 1910.

2. Report of the Council on Pharmacy and Chemistry, J. A. M. A. **54**: 290 (Jan. 22) 1910.

3. Effort has been made throughout to include only those cases which have been found to be adequately recorded according to present-day custom. About eight of every ten reported prior to 1920 were found to present shortcomings sufficient to preclude their consideration as valid, incontrovertible evidence.

4. Babcock, W. W., and Pfahler, G. E.: A Conservative Treatment of Sarcoma, Pennsylvania M. J. **11**: 849, 1907-1908.

5. Trypsin was employed by direct application in an attempt to "digest" the tumor mass. Doyen's serum was a serum prepared by the immunization of animals to organisms isolated from tumor tissue; the so-called Doyen's bacillus which was supposed, by Doyen, to bear some etiologic relationship to malignant processes.

6. Spencer, C. G.: A Case of Sarcoma Treated with Coley's Fluid, Proc. Roy. Soc. Med., London **2**: 152 (Clinical Section) 1909.

7. It seems likely that this may have been a tumor of a persistent urachus.

later showing a gain of 15 pounds (6.8 Kg.) and the ability to take active exercise. The mass was still present, though greatly diminished in size. Thirty-four more injections were given into the mass or intramuscularly throughout the ensuing three months, during which time the mass entirely disappeared. The patient returned to active army life and was reported free of recurrence and well at the time of writing, two years later. Spencer's paper includes two other cases similarly and successfully treated, each shown in biopsy to be fibrosarcoma, one of the tonsil (which had recurred following each of three attempts at surgical eradication) and the other of the sheath of the femoral artery (with tumor thrombus) in which operation was refused.

Green[8] reported a series of three cases in which the patients were living and well from three to ten years following treatment with the Coley toxins. Two of these, giant cell sarcomas of the shoulder, were deemed inoperable when first seen. The third, a small round-cell sarcoma of the femur, recurred after operation. Injections were made directly into the tumors as well as intramuscularly at a distance. Disappearance of the masses and complete healing took place within three months in all cases, although the toxins were continued another three months thereafter. Soper[9] records two cases in which amputation was followed by recurrence. The patients were alive and well six years after intensive and prolonged administration of the toxins. In one of these cases a spindle-cell sarcoma of the scapula exhibited recurrence in the posterior chest wall after total excision of the pectoral girdle on the affected side. In the other, a periosteal sarcoma of the hip joint was probably inoperable at the time amputation was performed and pelvic recurrence ensued promptly. Newcomet,[10] however, reports a uniformly fatal issue in each of three inoperable cases with the combined use of the toxins and irradiation; he concludes that the toxins served merely to hasten the fatal issue. Odier[11] arrives at the same conclusion following his report of one case so treated.

During approximately the same time that the foregoing papers were appearing, Coley was enjoying a wide experience with the product and numerous of his reports were published.[12] In 1925 he reported[13] sixteen cases with more or less thorough roentgenographic and pathologic studies. However, in 1926 and 1927 a most comprehensive review[14] of 171 cases was presented by the same author, including a later follow up of many of the cases previously reported. In all instances the tumors were of the giant-cell, spindle-cell or periosteal-osteogenic type of sarcoma. This series included only sarcomas of long bones, in 111 cases of which toxins were administered alone or combined with amputation or with irradiation or with both, while in the remaining sixty, aside from biopsy, no initial treatment was given other than with radium or the roentgen ray. The distribution in either group as to the type, duration and location of the tumors is fairly equable, sufficiently so to warrant certain conclusions from the results as tabulated in a variety of ways. Of sixteen patients subjected to amputation with no other preliminary or postoperative treatment, fourteen were dead within a year, one died of pulmonary metastasis seven years later, and the other died of recurrence in the calvarium five years later. Thus, but two (or 12.5 per cent) of sixteen patients lived three years or longer, with seven years being the maximum period of survival. Of thirty-nine patients given the toxins following amputation as "prophylaxis" against recurrence, twenty (or 51 per cent) are reported alive and well from four to twenty-eight years later, with an average duration of survival when last reported of over eleven years. Of thirty-two patients living and well five years or more (average 11.7 years), all had received the toxins at one time or another (although irradiation and amputation may have been employed conjointly). In this group the limb was saved in fifteen cases (47 per cent) and sacrificed in five. Of twenty-nine patients receiving irradiation originally and amputation subsequently, if necessary, twenty-one died within a year, seven were alive from one to three years later, and one case was too recent to merit consideration.

Lilienthal[15] reports a well studied case of a female infant of 22 months suffering from a large mediastinal mass with extensive invasion of either lung. To reduce cardiac compression, a portion of the tumor was excised with, of course, no attempt at eradication. A diagnosis of angiosarcoma was made by F. S. Mandelbaum, of hemangioendothelioma by Louis Gross, and of malignant cellular tumor of embryonal type by James Ewing. The toxins were begun and continued for eleven days (increasing from one-fifth minim to 4½ minims), when the mother refused further treatment because of the severe reactions. Roentgenographic examination over two years later demonstrated the chest to be essentially normal in every respect, with no indication of the original process. Quite as thoroughly studied is the case of Christian and Palmer,[16] who record the occurrence of myelosarcoma of the tibia, on a chronic osteomyelitic basis, in a master mariner of 31 years. This diagnosis was concurred in by Ewing and Codman. Midthigh amputation was performed, but three months later a mass appeared just above the umbilicus and a month thereafter nodules had developed in the groin and the stump. The toxin treatment was instituted with an initial dose of one-fourth minim, increasing to 6½ minims daily. In seventeen days the circumference of the stump had decreased 2 inches (from 19 to 17 inches), the mass in the groin had disappeared and the supra-umbilical metastasis was distinctly smaller.

The dose was kept at 6½ minims a day for the ensuing week, when a daily increase of 1 minim was instituted and maintained until, finally, a dose of 18 minims was being administered. Because of severe emaciation, medication was discontinued after three weeks of the increased dosage, at which time the stump had resumed growth and considerable edema had appeared both in the stump and in the sound leg. Throughout the ensuing four months the patient's course was extremely retrograde; multiple metastases appeared in the abdominal wall, clavicles, sternum, scalp, cranium and the cervical vertebrae. The stump attained a circumference of 31 inches (almost twice the original size) and its end presented a large, necrotic area. Roentgen examination barely revealed the outline of the femoral cortex, the remainder of the bone having been completely destroyed. As a last resort the Coley toxins were begun once more, starting with 2 minims and increasing rapidly to 17, where they were maintained for one month and, following a two weeks rest, again instituted for another three weeks. At this time the stump had healed completely and had returned to its normal size (17 inches); all evidence of metastasis had disappeared except for a residual roughening of the clavicle demonstrable on palpation. The patient was discharged as tentatively cured with instructions to return twice yearly for short courses of injections. At the time of publication, Christian and Palmer report the patient to be living, well and free from recurrence two years after the beginning of treatment.

The Coleys[17] record the histories of fifty-five cases of sarcoma including photographs, roentgenograms, photomicrographs and complete follow-up records. Several of these patients had definite pulmonary or other distant metastases; in most cases the pathologic diagnosis was confirmed by such men as Caven of Toronto, Ewing of New York or Welch of Baltimore. These are the cases a statistical abstract of which was discussed in a previous paragraph.

It appears that (1) undoubtedly the combined toxins of erysipelas and prodigiosus may sometimes play a significant rôle in preventing or retarding malignant recurrence or metastasis; (2) occasionally they may be curative in hopelessly inoperable neoplasms; (3) probably their value is rather strictly

8. Green, W. E.: The Coley Treatment of Inoperable Sarcoma by the Combined Toxins of Erysipelas and Prodigiosus, North American J. Homeop. **53**: 685, 1907.

9. Soper, R. W.: Treatment of Sarcoma by Injections with Coley's Toxins, Dietet. & Hyg. Gaz. **24**: 10, 1908.

10. Newcomet, W. S.: Results in the Treatment of Sarcoma, Pennsylvania M. J. **11**: 846, 1907-1908.

11. Odier, R.: Traitement des affectiones sarcomateuses par les toxines de M. Coley, Rev. méd. de la Suisse Rom. **28**: 649, 1908.

12. Coley, W. B.: Sarcoma; Its Treatment; Operative and by the Mixed Toxins, Brooklyn M. J. **20**: 313, 1906; Treatment of Sarcoma with the Mixed Toxins of Erysipelas and Prodigiosus, Boston M. & S. J. **158**: 175, 1908; Ann. Surg. **48**: 455, 465, 805, 1908; Lancet **2**: 173, 1909; Detroit M. J. **9**: 197, 1909.

13. Coley, W. B.: Sarcoma of the Long Bones, S. Clin. North America **5**: 117 (Feb.) 1925.

14. Coley, W. B., and Coley, B. L.: Primary Malignant Tumors of the Long Bones, Arch. Surg. **13**: 779 (Dec.) 1926; **14**: 63 (Jan.) 1927.

15. Lilienthal, Howard: Mediastinal Sarcoma Treated by Coley's Fluid, Ann. Surg. **85**: 615 (April) 1927.

16. Christian, S. L., and Palmer, L. A.: An Apparent Recovery from Multiple Sarcoma, Am. J. Surg. **4**: 188 (Feb.) 1928.

17. Coley, W. B., and Coley, B. L. (footnote 14, second reference).

limited to tumors of entodermal or mesodermal derivation and, more particularly, in the case of bone tumors, to those exhibiting little or no osteoplasia. The Council has, for these reasons, retained Erysipelas and Prodigiosus Toxins-Coley in New and Nonofficial Remedies, with a view to facilitating further studies with the product, especially in connection with its use as a prophylactic in conjunction with conservative or radical surgery. Its use in definitely inoperable cases may be quite justified, in many instances, as a desperate attempt to combat the inevitable.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

RITTER TOMATO JUICE

Manufacturer.—P. J. Ritter Company, Philadelphia.

Description.—Canned tomato juice, retaining in high degree the natural minerals and vitamins. Seasoned with salt.

Manufacture.—Field ripened, selected tomatoes are washed in running water and by water sprays, inspected for removal of damaged and unsuitable fruit, trimmed by hand, again sprayed with water, passed through a steamer, automatically cut, and conveyed to a supply kettle which feeds a screw type, stainless steel air tight machine for expressing the juice through a fine screen. The juice is conveyed to stainless steel kettles and is heated to 85 C. in about six minutes, salt is added, and the juice is flowed through glass lined pipes to the filling machines and filled into bottles or enamel lined cans, which are processed at 90 C. and cooled to 37 C.

Analysis (submitted by manufacturer).—

	per cent
Moisture	93.1
Total solids	6.9
Ash	1.2
Sodium chloride	0.8
Fat (ether extract)	0.1
Protein (N × 6.25)	1.0
Reducing sugars before and after inversion	3.5
Crude fiber	0.1
Carbohydrates other than crude fiber (by difference)	4.5

Calories.—0.2 per gram; 6 per ounce.

Claims of Manufacturer.—This tomato juice is prepared by a process permitting retention in high degree of its natural vitamins A, B and C.

KRIM-KO CHOCOLATE FLAVORED DRINK

Bottlers and Distributors.—(1) Chapman Dairy Company, Kansas City, Mo.; (2) Concordia Creamery Company, Concordia, Kan.; (3) Elmhurst Dairy, Inc., Hornell and Wellsville, N. Y.; (4) Fargo Dairy, Inc., Batavia, N. Y.; (5) Fischl Ice Cream and Dairy Company, Manitowoc, Wis.; (6) Geneva Milk Company, Geneva, N. Y.; (7) Graham Milk Company, Ottumwa, Iowa; (8) Hydrox Dairy, Inc., Olean, N. Y.; (9) Ionia Creamery Company, Inc., Ionia, Mich.; (10) Lehrack-Ferguson Dairy Products Company, Wichita Falls, Texas; (11) Lemke Milk Products Company, Wausau, Wis.; (12) Luce Dairy Company, Ithaca, N. Y.; (13) Magic City Ice and Milk Company, Endicott, N. Y.; (14) Merkle Dairy Company, Kalamazoo, Mich.; (15) Muller's Dairy, Rockford, Ill.; (16) Natoma Farm, Hinsdale, Ill.; (17) Quality Milk Company, Fort Smith, Ark.; (18) Sheboygan Dairy Products Company, Sheboygan, Wis.; (19) Sunlite Dairy Company, Oshkosh, Wis.; (20) Topeka Pure Milk Company, Topeka, Kan.; (21) The United Dairy Company, Wheeling, W. Va.; (22) Weber Dairy Company, Joliet, Ill.; (23) West End Dairy, Charleston, S. C.; (24) Williamsport Milk Products Company, Inc., South Williamsport, Pa.

Licensor.—Krim-Ko Company, Chicago, manufactures the Krim-Ko Chocolate Flavored Drink Base and licenses its use, the name Krim-Ko, and standard advertising under definite contract conditions.

Description.—Pasteurized chocolate flavored sweetened skim milk; contains skim milk (from 0.5 to 1.5 per cent milk fat), sucrose, chocolate and cocoa, tapioca flour, salt and traces of tartaric acid and agar; flavored with imitation vanilla extract. See Krim-Ko Chocolate Flavored Drink, THE JOURNAL, June 30, 1934, page 2187.

VITAMIN D FORTIFIED PASTEURIZED MILK

(1) AVONDALE FARMS
(2) BROADVIEW DAIRY
(3) QUALITY DAIRY PRODUCTS COMPANY
(4) RIDER'S
(5) SEFCIK DAIRY CO.'S
(6) SOUTHERN DAIRIES
(7) SPRINGBROOK DAIRY'S
(8) VITEX LABORATORIES

Distributors.—(1) Avondale Farms Creamery, Inc., Knoxville, Tenn. (2) Broadview Dairy, Inc., Portland, Ore. (3) Quality Dairy Products Company, Salt Lake City. (4) The Rider Dairy Company, Danbury, Conn. (5) Sefcik Dairy Co., Chicago. (6) Southern Dairies, Inc., Asheville and Winston-Salem, N. C., and Knoxville, Tenn. (7) Springbrook Dairy, Portland, Ore. (8) Vitex Laboratories, Detroit.

Description.—Bottled pasteurized milk fortified with vitamin D (vitamin D concentrate prepared from cod liver oil); contains 400 U. S. P. X (Revised, 1934) vitamin D units per quart.

Preparation.—The milk complies with legal requirements and is pasteurized by the standard holding method. See THE JOURNAL, July 1, 1933, page 34, for description of fortification with vitamin D.

Vitamins.—The vitamin D concentrate used and the fortified milk are regularly tested biologically. Clinical investigation shows this milk to be a reliable antirachitic agent, if the proper amount is used.

Claims of Distributors.—A vitamin D fortified, antirachitic pasteurized milk having otherwise the flavor and food values of usual pasteurized milk.

DOLE HAWAIIAN FINEST QUALITY PINEAPPLE

DIAMOND HEAD BRAND CRUSHED, SLICES AND TIDBITS
HAWAIIAN CLUB BRAND CRUSHED, SLICES AND TIDBITS
HONEY DEW BRAND CRUSHED, SLICES AND TIDBITS
PANAMA PACIFIC BRAND CRUSHED AND HALF SLICES
PINE-HEART TIDBITS
SEA ISLAND BRAND SLICES AND HALF SLICES
SURF RIDER BRAND CRUSHED AND HALF SLICES

Packer.—Hawaiian Pineapple Company, Ltd., San Francisco.

Description.—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole Hawaiian canned pineapple products (THE JOURNAL, April 8, 1932, p. 1106, and April 29, 1933, p. 1338).

HIGH UP BRAND GOLDEN SYRUP

Distributor.—The Guymon-Petro Mercantile Co., Dodge City and Hutchinson, Kan.

Packer.—The Hubinger Company, Keokuk, Iowa.

Description.—Table syrup; corn syrup flavored with refiners' syrup. The same as Hubinger Golden Table Syrup, THE JOURNAL, January 20, 1934, page 213.

Claims of Manufacturer.—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, OCTOBER 6, 1934

NURSING EDUCATION

Phenomenal advances in the science of medicine during half a century have been paralleled by significant improvement in the art of caring for the sick. The development of the trained nurse has been an influential factor. Physicians, therefore, are vitally interested in the proper integration of nursing in the practice of medicine. The final report of the Committee on the Grading of Nursing Schools, containing the results of a comprehensive study of nurse training and nurse practice conducted over a period of eight years, emphasizes the rapid increase in the production of trained nurses and the widespread unemployment that was manifest even before the onset of the period of economic depression. Most people will readily agree that one nurse for every 100 families is more than the country can be expected to support.

The surplus of nurses is due, in part at least, to the large number of poor or mediocre schools in which the educational function is subordinated to the financial exigencies of the hospital. Many of these should be closed just as rapidly as the hospitals can make other arrangements for caring for their patients. One half of all the schools of nursing in the United States are conducted by hospitals with not more than seventy-five patients, while one fourth of the hospitals have only from eight to forty-two patients. The report lays stress on the excellence of the university schools of nursing and on the need of liberal endowments to maintain schools of this type. It recommends that most of the training schools be closed and that hospitals employ graduate nurses rather than students in caring for their patients. In this way the idle could be reemployed and the quality of hospital service improved. Moreover, the prediction is made that the change can be effected without increasing costs.

The committee considers in detail plans for improving nursing schools but realizes that schools most needing improvement will be least likely to adopt its suggestions. It therefore raises the question whether schools of nursing should not be licensed. It recommends that registration of graduate nurses be required in every state and studies made to determine whether all workers who take care of the sick for hire should be licensed. The failure to enforce medical practice acts should have indicated to the committee the likelihood that similar legislation for nurses would be inoperative.

In a summary of its investigations the committee says: "The present system of nursing education is, in general, not attracting as many women of adequate capacity and basic training as would be desirable and is not giving them the quality of training which fits them for the demands of their professional career. On the other hand, it is producing far too large a number of nurses of a type unsuited to those demands." Opinions as to the proper function of the nurse are so divergent that these conclusions will not meet with unquestioning assent.

ERYSIPELAS AND PRODIGIOSUS TOXINS (COLEY)

In this issue of THE JOURNAL (p. 1067) is reported the reacceptance for inclusion in New and Nonofficial Remedies of Erysipelas and Prodigiosus Toxins (Coley), long, albeit somewhat sporadically, employed in the treatment of selected cases of inoperable bone sarcoma. Although Coley first employed a vaccine of Streptococcus erysipelatis in inoperable malignant conditions as early as 1893, a satisfactory explanation of the therapeutic mechanism has not yet been advanced. The use of the product, like that of nonspecific proteins, has rested on an empirical basis supported solely by clinical observations of occasional cases of inoperable malignant disease which have exhibited spontaneous regression following fulminating attacks of acute infectious diseases, particularly erysipelas. Sir James Paget is said to have been the first to record such an occurrence.

Jacobsen [1] in a recent paper advances a theory based on related observations of the alleged increased incidence of cancer and the noteworthy present-day decrease of acute bacterial diseases in general. He cites a series of facts which, it is claimed, will represent the uniform observations of any selected group of widely experienced clinicians with reference to the incidence of malignant growths in patients the past victims of a common infectious process. Among his citations are the lessened frequency of neoplastic disease in the actively tuberculous, in the chronically osteomyelitic and in patients with acute infectious diseases in general, but particularly in those giving a history of typhoid, paratyphoid, scarlatina and diphtheria. Jacobsen's statement that remission of a malignant process following erysipelas is less likely to be permanent than that following typhoid or any acute process which produces a lasting, serologically demonstrable and specifi-

1. Jacobsen, C.: Chronic Irritation of Reticulo-Endothelial System Hindrance to Cancer, Arch. f. Dermat. u. Syph. **169**: 562 (Feb.) 1934.

cally homologous immunity tend to controvert Coley's stand. The theory is put forth that the increased cancer rate, while due to modern public health and sanitary measures, is not a function of the increased number of persons now enabled to attain the so-called cancer age. To render this view tenable, the greater occurrence of cancer in the age group from 30 to 50 is cited.

Little experimental work is quoted, although Teutschlander [2] has demonstrated a definite decrease in the susceptibility of tuberculous fowls to the Rous chicken sarcoma.

Jacobsen concludes (1) that the evidence tends to support the hypothesis that the reticulo-endothelial system, when sufficiently active (as when stimulated by one or a number of acute infectious processes), may attain in a measure the ability to cope with neoplastic diseases in a similar if not identical manner, and (2) that the present increase in malignant morbidity is due to the decreased resistive powers of the reticulo-endothelial system occasioned by the lessened incidence of exposure to and infection of the general public with those diseases which were widely endemic before the advent of modern public health methods. As a corollary to these conclusions it is suggested that routine immunization of cancerous patients to typhoid up to an agglutinin titer of 1:800 may prove of value but that surgery should remain the therapeutic measure of choice whenever conditions permit. Two of the conclusions would appear too broad in the light of the reported evidence; namely, (1) that as acromegaly is regarded as a disease of the pituitary so should cancer be regarded as a disease of the reticulo-endothelial system, and (2) that the hope of prevention, if not the treatment of cancer, lies in vaccinotherapy with markedly antigenic substances. The possibility of accumulating more accurate data in this regard seems particularly likely at present through a follow up and study of the cancer rate among veterans of the World War, the vast majority of whom were subjected to typhoid-paratyphoid inoculation.

These observations, in the main, are dependent on statistical surveys; it is only reasonable to point out that the matter of the trend of cancer incidence is distinctly controversial at present. If Wood's [3] views or those recently expressed editorially by THE JOURNAL [4] are correct, Jacobsen's work is untenable. However, if Macklin's [5] report is reliable, Jacobsen's reticulo-endothelial theory is deserving of thoughtful consideration.

Whatever the immediate decision, it would appear possible that public health and sanitation, as developed throughout the years, may prove to have been a two-edged sword. Certain it is, however, that its sharpest edge, thus far, has been that which has reduced typhoid, plague, cholera, smallpox, diphtheria and a score of other diseases to the realm of the infrequent and added years to life expectancy in comparison with which even the increased cancer toll seems of significantly lesser importance. Further studies on the effect of powerfully antigenic substances in inoperable malignant conditions or as a postoperative measure in attempting to combat recurrence seem to be indicated in the light of the accumulated evidence.

2. Teutschlander: Zentralbl. f. Bakt., I Orig. **122**: 57 (No. 113) 1931.
3. Wood, H. B.: Reliability of Cancer Statistics, Am. J. Surg. **28**: 31 (Oct.) 1932.
4. Is Cancer Becoming More Prevalent? editorial, J. A. M. A. **103**: 113 (July 14) 1934.
5. Macklin, Madge T.: Is the Increase of Cancer Real or Apparent? Am. J. Cancer **16**: 1193 (Sept.) 1932.

REBATES AND COMMISSIONS

Elsewhere in this issue (p. 1088) appears a letter from the secretary of the American Surgical Trade Association discussing the code under which dealers in surgical apparatus and supplies will work under the National Recovery Act. The significant paragraph for physicians is one that now places legal control over a situation that was formerly subject only to ethical considerations.

For many years the organized medical profession of this country has been opposed to the acceptance of commissions or rebates by doctors from the manufacturers of surgical supplies. The practice is a low form of the division of fees. It is developed primarily to induce doctors to send their patients to manufacturers who pay large commissions rather than to those able to supply the patient with the apparatus required at the lowest possible cost. Many physicians of high principles adopted the practice of turning over such rebate checks directly to their patients; others simply returned the checks to the manufacturer and discontinued the recommendation of patients to such manufacturers. Others, however, accepted such fees, consoling themselves with the thought that the fee might be considered an added honorarium for determining that the apparatus fitted the condition for which it was prescribed. Nevertheless, reasonable excuse is not to be found for this practice. In its eventual effects on the patient and on the practice of medicine it could do nothing but harm. Hence, regardless of what one may think personally of the development of the codes and of their application to industry, the legal restriction on the giving of rebates is bound to have a beneficial effect on this phase of medical practice.

In certain other ways, as well, the codes are beginning to operate for the development of higher standards in relationship to other phases of medical work. It seems likely that the use of the word "doctor" in commerce for promoting the sale of various types of shoes or other goods will also be restricted to legitimate purposes. In the drug field, higher standards are being developed for several phases of the industry.

In other branches of commercial life, some manufacturers have already found means for evading the spirit of the codes to which they affixed their signatures. The medical profession, with many centuries of ethical

tradition behind it, will welcome these new forms of control, which place the force of the law behind the principles of right that the profession has always recognized and, for the most part, observed.

THE COURTS AND THE MILK SUPPLY

Cooperation between various governmental bureaus with appreciation of special points of view leads to efficient service for the public. This situation has come to pass between the judiciary and those groups whose concern is the public health with relation to milk control. Tobey[1] has stated that the "sagacious principles set forth by the learned judges will appeal to the dairy industry because of the recognition accorded the nutritional value of milk; and these decisions will likewise find favor with health officials because of the liberality with which all reasonable regulation of milk in the interests of public health and welfare is upheld." In the past thirty years or more several important decisions relative to milk control have been rendered by the federal Supreme Court. These decisions concerned, among others, the state's power to delegate to local health authorities the supervision of milk control, to regulate the sanitary production of milk and to prohibit impure milk or diseased cattle from entering a state. However, the recent decision upholding an emergency law of New York is by far the broadest yet handed down. Thus the court contends that price fixing under certain restrictions is a proper use of the police power of the state to regulate the "health, safety, comfort, morals and welfare of the people."

Numerous court decisions have declared that laws leading up to the eradication of bovine tuberculosis are constitutional. In 1932 the Supreme Court of Minnesota ruled that county commissioners have discretionary power to provide for tuberculin testing and that they must do so when petitioned, as these boards are agencies of the state in carrying out "its own paramount governmental duty to protect public health." The first decision on record dealing with public health measures for the control of undulant fever was rendered by the United States Supreme Court in 1933. A state commissioner of agriculture and markets denied entry of a herd of cattle on the ground of failure to possess a certificate showing freedom from Bang's disease, the cause of undulant fever in man; this order was subsequently upheld by the higher court on the ground that it was rendered in good faith and to safeguard public health by preventing the spread of the disease among cattle.

The purchase of milk bottles is an item of no inconsiderable expense in the distribution of milk. An ordinance in a Southern city required that milk bottles bear no other name or trade mark than that of the producer or distributor. The Supreme Court decided that this requirement was unreasonable and would, if enforced, prevent even the name of the manufacturer on the bottle. The decision, however, left no doubt as to the recognition by the court of the importance of a sanitary milk supply and of the right of the government to enforce necessary regulatory measures. The stress of business conditions leads constantly to efforts to circumvent the dicta of safe practices in the production, processing and distribution of milk; it is a comfort to be assured that the higher tribunals acknowledge the significance of a sanitary supply of this essential food.

1. Tobey, J. A.: Pub. Health Rep. **49**: 993 (Aug. 24) 1934.

Current Comment

INTENSIVE TREATMENT OF DEMENTIA PARALYTICA

The clinical picture of dementia paralytica of thirty years ago seems to be losing some of its easily recognizable features. The expansive, euphoric psychosis or the pronounced neurologic symptoms that formerly were so common are not now so frequently observed. This change may be due to the fact that the present group of patients in the early period of their syphilitic infection were treated with such effective remedies as arsphenamine and other modern arsenicals. The patient today may show behavior changes without pronounced psychoses and at the same time laboratory changes indicative of cerebral invasion by the spirochetes. Carlisle and O'Neil[1] have reported ninety-nine cases of dementia paralytica, all of which presented behavior disorders and the usual neurologic and laboratory signs. These patients, mostly world war veterans, were followed up month after month for a long period, during which the changes in the clinical and laboratory observations were carefully noted. The patients were treated to the utmost. One patient, for example, in about four years received 186 injections of tryparsamide, 182 injections of bismuth compounds, 56 injections of sulpharsphenamine and 44 injections of mercury compounds. Many of them were also given malaria therapy. One patient was subjected to 17 malarial chills, 132 injections of tryparsamide, 134 injections of bismuth compounds, 44 injections of mercury compounds and 39 injections of sulpharsphenamine. In fact, the authors designate their treatment of these cases as "extra-intensive treatment." Sixteen of these patients have thus been enabled to leave the hospital and they have been making a satisfactory adjustment. Of those remaining in the hospital, 85 per cent have parole and pass privileges. The majority have been permitted to visit outside the hospital ninety days or more and there were no conflicts. Four of the patients have died. The authors believe that the agitative type of patient reacted more favorably to malaria therapy. Some cases have shown improvement, while their serologic reactions continued strongly positive; others have shown no mental improvement, while their serologic reactions continued to be negative. Nine of these cases have shown no mental improvement under "extra-intensive treatment."

1. Carlisle, C. L., and O'Neil, R. T.: Results of Extra-Intensive Treatment of General Paralysis of the Insane, M. Bull. Veterans' Administration **10**: 309 (April), **11**: 31 (July) 1934.

Association News

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows:

October 11. Multiple Births, W. W. Bauer, M.D.
October 18. Keep Fighting Diphtheria, W. W. Bauer, M.D.
October 25. What Is a Serum? W. W. Bauer, M.D.

National Broadcasting Company

The American Medical Association broadcasts on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

October 9. School Health Problems, W. W. Bauer, M.D.
October 16. Research in Medicine, A. C. Ivy, M.D.
October 23. Reading About Health, W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—Dr. William J. Donald, Athens, for several years health officer of Limestone County, has been appointed in charge of the health unit of Covington County, with headquarters in Andalusia.——Mr. W. Thurber Fales, Montgomery, for ten years director of the bureau of vital statistics of the state department of health, has resigned to accept a similar position with the Baltimore health department.

Protest Publicity on Dengue Fever.—The Etowah County Medical Society has adopted a resolution protesting against the publicity given to the prevalence of dengue fever in the county. Declaring that this publicity might prove harmful, especially since no case had been reported in twenty-five years, the society called on the state health department to give, through the press, the full facts regarding the prevalence of the disease. Newspapers pointed out that the county had been selected with others in the state as a site for the campaign against the disease to prevent its introduction from adjacent states where outbreaks have been reported. The resolution commended the state and local health departments for their efforts to eradicate mosquitoes.

ARKANSAS

Clinical Conference.—The staffs of the Leo N. Levi Memorial Hospital and the Charles Steinberg Clinic will hold their fourth clinical conference, Hot Springs National Park, October 11. Guest speakers will be Drs. George R. Livermore, professor of urology, University of Tennessee School of Medicine, Memphis, and Col. William B. Meister, chief of the medical service, Army and Navy General Hospital, Hot Springs National Park. The conference will consist of lectures, demonstrations and clinics on medical and surgical subjects of especial interest to the general practitioner. Instead of reading papers this year, members of the staff will present cases and clinical reports. The meeting will close with an informal dinner at the Arlington Hotel. No registration fee will be charged.

CALIFORNIA

New Department of Bacteriology.—A department of bacteriology has recently been established at the University of California at Los Angeles, according to *Science*. Carl C. Lindegren, Ph.D., research assistant in microbiology at the Mellon Institute, Pittsburgh, has been appointed chairman.

Jailed for Violation of Medical Practice Act.—William Fisher, Los Angeles, was sentenced to jail for 180 days following his plea of guilty to a charge of violating the medical practice act. He was committed to jail when he was unable to pay a fine of $600. Fisher used an escharotic cancer paste, with which he is said to have treated a patient for cancer of the breast for several months.

Personal.—Dr. Dorothy M. Henderson, Van Hornesville, N. Y., has been appointed medical adviser to women and director of women's physical education at Stanford University, succeeding Dr. Bertha Sabin Stuart Dyment, it is reported. Dr. Henderson is a graduate of Northwestern University Medical School, Chicago, class of 1932.——Dr. Francis M. Stump, Crescent City, has been appointed health officer of Del Norte County to succeed Dr. Wilson Stegman.——Dr. Warren L. Nichols has succeeded Dr. Donald C. Fowler as city health officer of Exeter.

Society News.—Dr. Arthur Elmer Belt, Los Angeles, addressed the Galen Medical Society in San Diego, September 10, on "Obstructive Uropathy." The Galen society is composed of younger members of the San Diego County Medical Society. ——Dr. Leo L. Stanley, San Rafael, addressed the Hollywood Academy of Medicine, September 20, on "Looking Back on Twenty Years of Prison Medicine."——Dr. James C. Hayes, Medford, Ore., addressed the Humboldt County Medical Society in Crescent City, August 16, on "Fractures of the Long Bones," and Dr. George K. Rhodes, San Francisco, "Drainage of the Abdomen and Traumatic Injuries to the Abdomen."——Dr. Joseph Salem Rubin, Los Angeles, addressed the Imperial County Medical Society in Calexico, September 18, on "Nephroptosis."

DELAWARE

Health at Wilmington.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended September 22, indicate that the highest mortality rate (19.1) appears for Wilmington, and the rate for the group of cities as a whole, 9.6. The mortality rate for Wilmington for the corresponding period last year was 11.3, and for the group of cities, 9.8. The annual rate for eighty-six cities for the thirty-eight weeks of 1934 was 11.4, as compared with 10.9 for the corresponding period of the previous year. Caution should be used in the interpretation of weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

DISTRICT OF COLUMBIA

University News.—New appointments at George Washington University School of Medicine include that of Dr. Herbert P. Ramsey as assistant professor of obstetrics and gynecology. Among the guests present at the opening of the one hundred and tenth academic year were Dr. John L. Reenstierna, professor of bacteriology, University of Upsala, Sweden.

Personal.—Brig. Gen. Frank R. Keefer, U. S. Army, retired, formerly assistant surgeon general, was recently awarded the honorary degree of doctor of science by Dickinson College, Carlisle, Pa.——Lieut. Col. Jules Voncken, director of the Military Hospital at Liége, was guest of honor at a luncheon at the Army and Navy Club, September 6. Colonel Voncken was en route to Tokyo to represent Belgium at the International Conference of Red Cross Societies.

FLORIDA

Society News.—At a recent meeting of the Bay County Medical Society in Panama City, Dr. James M. Hoffman, Pensacola, directed a symposium on cancer control. Other speakers on the program included Drs. Mozart A. Lischkoff, Pensacola, on common ear conditions; John T. Ellis, Dothan, hematuria, and James H. Fellows, Pensacola, location of hemorrhage in brain due to birth injuries.——Speakers before the Dade County Medical Society, September 7, were Drs. Robert T. Spicer, Miami, on trichomonas vaginalis, and Ernest Donald, Miami, the rectum.

GEORGIA

Triple Vaccine Discontinued.—The laboratory of the Georgia State Department of Health has discontinued the distribution of mixed or typhoid-paratyphoid vaccine. The facts that paratyphoid fever is relatively rare in Georgia and that the U. S. Army, which first introduced the use of triple or mixed typhoid vaccine, has recently discontinued its use entirely were cited as reasons for this action.

Personal.—Dr. Isaac C. Evans has been named city physician and health officer of Columbus, succeeding Dr. William E. Mayher Jr., resigned.——Dr. H. P. Rankin, formerly of Elba, Ala., has been appointed health officer of Grady County

to succeed Dr. James R. Dykes; the latter has been named to a similar position with the Thomas County Health Department, with headquarters at Thomasville, succeeding Dr. Hugh B. Jenkins, who resigned to become medical inspector for the Civilian Conservation Corps at Pensacola, Fla.——Dr. Emile B. Woods, Valley Junction, Iowa, has been appointed assistant professor of obstetrics and gynecology, University of Georgia School of Medicine, Augusta.

District Meeting. — The Fifth District Medical Society will meet at the Academy of Medicine, Atlanta, October 18. Dr. Marion C. Pruitt, Atlanta, president of the Fulton County Medical Society, will give the address of welcome, and Dr. Clarence L. Ayers, Toccoa, president, Medical Association of Georgia, the response. Other speakers on the program will include:

Dr. William F. Shallenberger, Atlanta, Surgical Complications of Pregnancy.
Dr. James E. Paullin, Atlanta, Pathology of Rheumatoid and Hypertrophic Arthritis.
Dr. Tinsley R. Harrison, Nashville, Pathogenesis of Congestive Heart Failure.
Dr. Isidore Cohn, New Orleans, Masses in the Groin.

Dr. Joseph Yampolsky, Atlanta, is president of the district society, and Dr. Hulett H. Askew, Atlanta, secretary.

ILLINOIS

Health Survey of Negro Children. — That the Negro children under preschool age in East St. Louis are in good physical condition is indicated in a recent survey made by the state department of health. This condition prevails despite the fact that nearly one half of them are in families on relief, it was stated. Only 117 out of 715 children examined exhibited any degree of deviation from normal nutrition. Nearly three fourths, or 72 per cent, had no decay whatever in their teeth. Only seventeen had detectable visual defects and only fifteen had any impairment of hearing. There were twenty-four with some manifestation of heart impairment or abnormality. The survey was carried on during the first week in September to determine prevailing health conditions among Negro children with a view toward establishing a program for the improvement of the race (THE JOURNAL, September 1, p. 686). The study was made in St. Clair County where the Negro population is principally concentrated.

Chicago

Personal.—Dr. Frank S. Needham, Oak Park, won the Van Derslice cup at the annual golf tournament of the Chicago Medical Society, August 1, with a low gross score of 79.—— A tea was given by friends of the late Dr. Charles H. Miller, September 20, as a part of a campaign to raise funds for the Charles H. Miller Memorial Fund, which will be used to endow a room at the Woodlawn Hospital. Dr. Miller died last March.

Course for Pediatricians.—The management of children's behavior problems is the theme of a series of lectures to be given at the Institute for Juvenile Research, 907 South Lincoln Street, under the auspices of the University of Illinois College of Medicine. Lectures will be delivered on Tuesdays, October 9 to November 27. For a limited number of physicians these lectures may be supplemented by clinical experience in the treatment of children's behavior problems under supervision. Dr. Paul L. Schroeder is director of the Institute of Juvenile Research.

Symposium on Cancer.—Carcinoma of the breast will be considered in a symposium before the Chicago Medical Society, October 10. Dr. William C. MacCarty, professor of pathology, University of Minnesota Graduate School of Medicine, Rochester, will discuss the pathology; Dr. Dean Lewis, professor of surgery, Johns Hopkins University School of Medicine, Baltimore, the diagnosis and differential diagnosis; Dr. Arthur D. Bevan, clinical professor of surgery, Rush Medical College, surgical treatment, and Dr. Edward L. Jenkinson, roentgenologist of St. Luke's Hospital, the radiologic treatment.

Discussion of Medical Practice and Economics.—Medical practice and government plans for economic security will be discussed at a meeting of the North Side Branch of the Chicago Medical Society in Thorne Hall, McKinlock Campus, Northwestern University School of Medicine, October 8. Participating in the symposium will be the following:

Dr. Olin West, Secretary and General Manager, American Medical Association, The Situation Today.
Dr. Rosco G. Leland, Director, bureau of medical economics, American Medical Association, What Medicine Is Doing.
Dr. Morris Fishbein, Editor, THE JOURNAL of the American Medical Association, What Medicine Should Do.
Frederick A. Britten, congressman, ninth district, The Legislator's Viewpoint.

Guests of honor at this meeting will include Drs. Charles H. Phifer, Julius H. Hess and Thomas P. Foley, president, president-elect and secretary of the Chicago Medical Society, respectively; Stanley D. Tylman, D.D.S., president of the Chicago Dental Society; George L. Secord, president, Chicago Retail Druggists Association, and Lenore Tobins, president of the first district, Illinois State Nurses' Association. Members of these organizations are requested to bring interested friends. Dr. Irving S. Cutter, dean, Northwestern University School of Medicine, will give the address of welcome.

INDIANA

Society News.—Dr. Harry E. Mock, Chicago, will speak before the Tippecanoe County Medical Society in Lafayette, October 16, on "Management of Acute Head Injuries." Dr. Jean P. Pratt, Detroit, discussed "Endocrine Disturbances Peculiar to Women," September 13.——Dr. Claud R. G. Forrester, Chicago, will speak before the Tenth District Medical Society in Gary, October 31, on "Reduction of Fractures Under Local Anesthesia with Ambulatory Treatment."

IOWA

Society News.—A symposium on cancer of the stomach was presented before the Des Moines Academy of Medicine and Polk County Medical Society, September 25, with the following speakers: Drs. John T. Strawn, William E. Sanders and John B. Synhorst. Dr. Clinton E. Harris, Woodmen, Colo., will speak before the organization, October 8, on "Diagnosis of Lung Tumors," and Dr. Russell L. Cecil, New York, October 26, "Influenza and the Common Cold."——Speakers before the Dubuque County Medical Society, September 11, included Drs. Porter P. Vinson, Rochester, Minn., on "Bronchoscopic Diagnosis and Treatment of Lung Conditions"; Frederick A. Figi, Rochester, Minn., "Fractures of Nose, Jaws and Other Facial Bones," and Leo G. Rigler, St. Paul, "Early Diagnosis of Cancer."

KENTUCKY

Health Officer Appointed. — Dr. Charles W. Garrison, Little Rock, Ark., formerly state health officer of Arkansas, has been appointed health officer of Lexington to succeed Dr. Garland L. Weidner, who resigned a year ago. Dr. Garrison served as head of the health service of Arkansas from 1914 to 1933. He is a former president of the Conference on State and Provincial Health Authorities of North America and in 1924 represented the United States at a League of Nations Health Conference in Geneva.

Society News.—Dr. James W. Bruce, Louisville, addressed the Jefferson County Medical Society, September 17, on "Treatment of Burns in Children." Dr. Joshua B. Lukins, Louisville, addressed the society, September 3, on malpractice suits.—— Drs. Isaac A. Arnold and John T. Bate Jr. addressed the Louisville Surgical Society, September 27, on "Gas Gangrene" and "Injuries of the Supraspinatus Muscle," respectively.—— Dr. Claude S. Eddleman was the speaker at a meeting of the Louisville Urological Society, September 25, on "Calculi of the Upper Urinary Tract."

LOUISIANA

Society News.—At a meeting of the Bi-Parish Medical Society (East and West Feliciana parishes) in Jackson, recently, Drs. Charles H. Voss and Irvine Ashton Robins, Baton Rouge, discussed "Diseases of China" and "Treatment for Primary Syphilis."——Dr. Fred W. Rankin, Lexington, Ky., addressed the Shreveport Medical Society, September 8, on cancer of the intestine.

Tri-State Meeting. — The Tri-State Medical Society of Arkansas, Louisiana and Texas will hold its annual session in Shreveport, October 16-17. Included among the speakers will be the following physicians:

Theodore M. Oxford, Shreveport, Fracture and Dislocation in the Elbow Region.
Wyeth B. Worley, Shreveport, Pyelitis in Children.
Arthur C. Scott, Temple, Texas, Gallbladder Surgery.
Ernest Sachs, St. Louis, Diagnosis and Treatment of Trigeminal Neuralgia.
Marvin T. Green, Ruston, Acute Suppurative Parotitis as a Complication in Abdominal Surgery.
Barton A. Rhinehart, Little Rock, Modern Gastro-Enterology.

Dr. Vesse R. Hurst, Longview, Texas, will give his presidential address on the opening morning. Other speakers will include the mayor, George W. Hardy; Dr. William S. Kerlin, president, Shreveport Medical Society, and Leonce J. Kosminsky, Texarkana.

MASSACHUSETTS

Public Relations Committee.—The Middlesex South District Medical Society has appointed a committee to study and promote better relations between the medical profession and the public. Dr. David C. Dow, Cambridge, has been named chairman of the committee which includes as members Drs. Elmer W. Barron, Boston; Charles F. K. Bean, Medford; Fred A. Higginbotham, Watertown; Walter H. Crosby, Boston; Dana F. Cummings, Natick, and Norman M. Hunter, Hudson. The report stated that the newly formed committee will work with Dr. Charles E. Mongan, Somerville, who is a member of the House of Delegates of the American Medical Association.

MINNESOTA

Credit Bureau Formed.—Twenty-four physicians of Winona County recently formed the Winona County Physicians' Credit Bureau. A credit list of all patients who have made no payments on accounts for six months is being compiled. Emergency service to relief patients is not included.

Chiropractor Sentenced for Producing Abortion.—Mrs. Katie Mae Jenks, a licensed chiropractor, pleaded guilty to a charge of criminal abortion in the district court at Alexandria, July 25, and was sentenced to two years at hard labor in the Women's Reformatory at Shakopee; she began her sentence, July 30.

Tuberculin Testing of Cattle.—Seventy-four of the eighty-seven counties in Minnesota are now accredited in accordance with regulations governing the tuberculin testing of cattle with the incidence of tuberculosis 0.5 per cent or less. It is expected that seven other counties will be accredited by the end of October, although it will be impossible to accredit the remaining six counties before June 1935. It was pointed out that the first tuberculin test has been administered to all the cattle in the state. The work has been somewhat handicapped by the drought, which made it impossible to adhere strictly to quarantine provisions in some accredited counties, because large numbers of cattle from drought-stricken counties were moved there for sustenance, according to the *Journal-Lancet.*

MISSOURI

Art in Medicine.—The William Rockhill Nelson Gallery of Art will be the scene of a special program planned by the entertainment committee of the Kansas City Southwest Clinical Society for registrants at the fall clinical conference. Mr. Paul Gardner, director, will discuss "Masterpieces of the Gallery Collection"; Dr. Logan Clendening, Kansas City, "Medical Subjects in Classic Art," and Dr. Edward H. Skinner, Kansas City, "Art and X-Ray."

Society News.—At a meeting of the Jackson County Medical Society in Kansas City, September 11, Drs. Carl H. B. Schutz and Ferdinand C. Helwig discussed water intoxication, and Dr. Cecil M. Kohn, "Treatment of Cardiac Disease by Total Thyroidectomy."——The Nodaway County Medical Society was addressed in Maryville, September 5, by Drs. James G. Montgomery and Donald R. Black, Kansas City, on "Surgery of the Spleen" and "Treatment of Diabetes," respectively.

Survey of After Effects of Encephalitis.—To determine the after effects of encephalitis, a survey was undertaken in St. Louis and St. Louis County the latter part of September by the St. Louis Metropolitan Health Council. The council has asked private physicians for permission to examine their patients with a view to reaching all patients still residing in the city and county. The work is expected to take three months and it is planned now to repeat the survey in a year. Official records show 1,097 cases of encephalitis with 221 deaths. Dr. Paul J. Zentay, St. Louis, is secretary of the Metropolitan Health Council.

NEW YORK

District Meetings.—The twenty-eighth annual meeting of the fourth district branch of the Medical Society of the State of New York was held in Gloversville, September 21-22. Among speakers were Drs. Edward M. Livingston, New York, on "Clinical Diagnosis of Surgical Diseases of the Abdomen"; Richard B. Cattell, Boston, "Diseases of the Colon," and Herman O. Mosenthal, New York, "The Heart Muscle with Advancing Years." At a dinner at the Sir William Johnson Country Club, speakers were Drs. Arthur J. Bedell, president, Medical Society of the State of New York, and Thomas Parran Jr., state health officer, both of Albany.——Dr. Earl D. Osborne, Buffalo, was guest speaker at the annual meeting of the third district branch of the Medical Society of the State of New York at Livingston, September 19, on "Treatment and Prognosis of Early Syphilis." Dr. Arthur J. Bedell, Albany, president of the state medical society, also made an address.——At the annual meeting of the sixth district branch of the Medical Society of the State of New York in Cortland, September 26, speakers included Drs. Russell L. Cecil, New York, on "Treatment of Pneumonia"; Claude F. Dixon, Rochester, Minn., "Surgical Management of Carcinoma of the Rectum and Rectosigmoid," and Donald Guthrie, Sayre, Pa., "The Tragedy of Appendicitis." Dr. Arthur J. Bedell, Albany, president of the state society, discussed the *New York State Journal of Medicine.*——At the annual meeting of the seventh district branch of the Medical Society of the State of New York in Auburn, September 27, speakers included Drs. Russell L. Cecil, New York, on "Common and Unusual Heart Lesions," and Harrison S. Martland, Newark, N. J., "Management of Gastric Lesions, Peptic Ulcer and Malignancy."

Cornerstone for Saratoga Spa Laboratory.—A new unit of the spa being developed by the state at Saratoga Springs was started September 14, when the cornerstone was laid for the Simon Baruch Research Laboratory. Gov. Herbert H. Lehman presided at the ceremonies, naming the laboratory for Dr. Simon Baruch, a pioneer in hydrotherapy in this country and for many years professor of hydrotherapy at the College of Physicians and Surgeons, New York. His son, Dr. Herman B. Baruch, New York, laid the stone. Dr. John H. Wyckoff, dean, New York University—Bellevue Hospital Medical College, was the orator of the occasion. The laboratory building will be the largest in floor area of the group of buildings now under construction at Saratoga. It will contain physicians' offices, experimental rooms for baths and an auditorium in addition to laboratories for roentgenography, fluoroscopy, capillary examinations, blood pressure and basal metabolism determinations, chemistry and physics. Other buildings of the center will include the Hall of Springs, a bath house of distinctive design, a hotel with sanatorium facilities, a bottling plant for the spring waters, and a recreation center, at which the remedial uses of sports will be stressed. Dr. Walter S. McClellan is medical director of the spa and members of the Saratoga Springs Commission are Pierrepont B. Noyes, Oneida, chairman, and Drs. Carl R. Comstock, Saratoga Springs, and Lemuel Whittington Gorham, Albany.

New York City

Hospital News.—At the invitation of the Bronx Hospital, Dr. Erwin Schiff, former professor of pediatrics, University of Berlin, delivered three lectures at the hospital, September 14, 18 and 21, on "Dehydration and Intoxication," "New Points of View in the Treatment of Intoxication and Diarrhea in Infants," and "Therapy of Neurodermatitis in Infants."

City Hospital Capacity Taxed.—During the first six months of 1934 New York City hospitals operated at more than their normal capacity, according to a report of the department of hospitals issued recently. The average daily census for all institutions was 19,060, while the bed capacity averaged 18,463. The number of days of hospital care for the six months was 3,500,000, a rate of 7,000,000 days of care per year, or approximately one day of institutional care for each inhabitant of the city. In addition the city pays for about 1,000,000 days of care for indigent persons in 105 private hospitals. During the first six months of this year there were 8,483 births in the city's hospitals and 9,759 deaths. The mortality rate, based on the number of persons treated was 7.3. In twelve general hospitals, the average length of stay was sixteen days. In twelve special hospitals, which include hospitals for chronic nervous disorders, cancer, tuberculosis and communicable diseases, the average stay was sixty-seven days. The city operates 121 ambulances on general emergency calls and nine exclusively on contagious disease calls. In the year 1933, ambulances responded to 310,255 emergency calls; 166,698 patients were treated on the spot and not moved to hospitals. In 7,651 cases the patients were found dead on arrival of the ambulance.

Society News.—A symposium on acute anterior poliomyelitis will be presented before the section of neurology and psychiatry of the New York Academy of Medicine, October 9; speakers will be Drs. John R. Paul and James D. Trask, New Haven, Conn., Arthur R. Elvidge, Montreal, Maurice Brodie, William H. Park and Claus W. Jungeblut.——The council of the Physicians Equity Association of America, Inc., at a meet-

ing in New York, September 19, unanimously endorsed the ten principles of policy adopted by the House of Delegates of the American Medical Association at its June meeting in Cleveland. Members of the council are Drs. William M. Cooper, Joseph E. Conroy, Cassius L. De Victoria, Joseph J. Eller, Judson C. Fisher, Seymour Fiske, Charles Goodman, Harold M. Hays, Samuel M. Kaufman, Locke L. MacKenzie, Malcolm Campbell, Alexander Nicoll, Herman B. Philips, Joseph Safian, Herman Sharlit, Clarence H. Smith, Robert E. Walsh, Andrew A. Eggston and Edward R. Cunniffe.——The third annual meeting of the Society for Plastic and Reparative Surgery will be held in New York, October 9-12.——A symposium on arthritis will be presented at the meeting of the New York City branch of the Society of American Bacteriologists, October 9, by Dr. Reginald Burbank, Dr. Currier McEwen, H. R. Sinay, William Reiner-Deutsch, Ph.D., Dr. Maximin D. Touart, Dr. Martin H. Dawson, G. H. Chapman and Dr. William B. Rawls.——Dr. Harrison S. Martland, Newark, N. J., Dr. Thomas A. Gonzales and Alexander O. Gettler, Ph.D., will discuss "Scientific Crime Detection" before the Science Forum of the New York Electrical Society, October 17.

NORTH CAROLINA

Society News.—At a meeting of the Ninth District Medical Society in Statesville, September 27, speakers included Drs. George M. Cooper, Raleigh, on "Maternal and Infant Mortality in North Carolina," and Benjamin W. McKenzie, Salisbury, "Serum Proteins in Infections"; H. Calvin Rea, D.V.M., Charlotte, "Relationship of Animal Diseases to Human Health," and Ernest A. Branch, D.D.S., Raleigh, "Undernourishment as Reflected in the Mouth."——The Catawba Valley Medical Society met at Hickory, September 11, with the following speakers: Drs. William G. Bandy, Lincolnton, on "Coronary Thrombosis"; Walter V. Costner, Lincolnton, "The Normal Heart in the Child"; John S. Lewis, Hickory, "Differential Diagnosis Between Certain Heart Conditions and Certain Surgical Conditions," and Clyde R. Hedrick, Lenoir, "Practical Value of Electrocardiography."

OREGON

Professor of Biochemistry Appointed.—Edward S. West, Ph.D., since 1923 a member of the faculty of Washington University Medical School, St. Louis, has been appointed professor of biochemistry at the University of Oregon Medical School to succeed the late Dr. Howard D. Haskins. Dr. West has done extensive research in biochemistry, especially in the field of carbohydrates.

PENNSYLVANIA

Organization to Consider Public Health Legislation.—The public health committee of the Medical Society of the State of Pennsylvania has recently completed the organization of the Public Health Legislative Conference of Pennsylvania, whose purpose is the dissemination of evidence against legislation detrimental to public health and arguments for legislation favoring public health. The conference is made up of two representatives each of the state medical society, the state eclectic medical society, the state homeopathic medical society, the nurses' association, pharmaceutical society, dental society, hospital conference and the woman's auxiliary of the state medical society. Dr. Chauncey L. Palmer, Pittsburgh, is chairman, and Will D. Everhard, D.D.S., Harrisburg, secretary. Analogous organizations have been established in every county in which they are practical.

Philadelphia

Dr. Kolmer Resigns as Professor of Medicine.—Dr. John A. Kolmer has resigned as professor of medicine at Temple University School of Medicine to devote more time to research. He will continue to teach immunology, bacteriology and chemotherapy but asked to be relieved of clinical work. Dr. Kolmer has held the professorship of medicine at Temple since August 1932, having previously been professor of pathology and bacteriology at the Graduate School of the University of Pennsylvania. Since 1912 he has been head of the department of pathology of the Research Institute of Cutaneous Medicine and was recently made director and president of the board of trustees.

Airplane Survey of Pollen.—The Philadelphia College of Pharmacy and Science has launched an aerial survey of airborne pollens, to be carried on for five years over the metropolitan area of Philadelphia, the New Jersey coast and out to sea for twenty miles. It is planned to measure accurately the density, nature and distribution of air-borne pollen in the upper atmosphere. Daily flights will be made during the remainder of the current season and throughout the seasons for the next four years. At a special meeting marking the beginning of the project, Drs. Theodore B. Appel, state health officer, J. Norman Henry, director of health of Philadelphia, Randle C. Rosenberger, chairman of the air hygiene committee of Philadelphia, and Arthur C. Morgan made addresses.

Pittsburgh

Executive Secretary Resigns.—Mr. Lester H. Perry, executive secretary of the Allegheny County Medical Society since September 1931, has resigned to become managing editor of the *Pennsylvania Medical Journal* and manager of the annual sessions of the Medical Society of the State of Pennsylvania.

Practical Courses for Physicians.—The eighth series of practical courses sponsored by the Allegheny County Medical Society will begin in October. Subjects to be treated are the dietetic management of metabolic disorders, obstetrics, fundamentals of everyday dermatology, slit lamp microscopy and ophthalmoscopy, hyperthyroidism and hypothyroidism, acute neurologic conditions, medical emergencies, and orthopedic surgery for the general practitioner.

Branch Society Has Graduate Assembly.—The fourth annual graduate assembly of the Allegheny Valley Branch of the Allegheny County Medical Society was held, September 15, at Tarentum. An operative clinic was held in the morning at the Allegheny Valley Hospital and the following program of addresses was presented in the afternoon:

Dr. William W. G. Maclachlan, Pittsburgh, Prognosis and Treatment of Pneumonia.
Dr. John Alexander, Ann Arbor, Mich., Advancing Scope of Thoracic Surgery.
Dr. Charles Howard Marcy, Pittsburgh, Diagnosis and Treatment of Chronic Lung Infections.
Dr. George W. Grier, Pittsburgh, Foreign Bodies in the Air Passages.
Dr. Carey P. McCord, Cincinnati, Chest Diseases Caused by Dust.

VERMONT

Surgical Meeting in Burlington.—The annual meeting of the New England Surgical Society was held in Burlington, September 28-29. Among physicians who appeared on the program were:

Dr. George A. Moore, Brockton, Mass., Bleeding Gastric Ulcer.
Dr. Thomas N. Hepburn, Hartford, Conn., Ureterorectal Anastomosis.
Dr. John Homans, Boston, Recurrent Peripheral Thrombophlebitis Causing Pulmonary Embolism.
Dr. Richard H. Miller, Boston, Acute Hematogenous Osteomyelitis.
Dr. Isaac M. Webber, Portland, Maine, The Limitations of Enterostomy and Undesirable Effects Incident to Its Use.
Dr. James W. Sever, Boston, Slipping Epiphysis of the Head of the Femur.

GENERAL

Science Writers Form Association.—Announcement was made September 14 of the formation of the National Association of Science Writers, made up of staff members of newspapers and press associations who devote their major efforts to the field of science. Mr. David Dietz, Cleveland, science editor for the Scripps-Howard newspapers, is president of the association, the purpose of which is to "foster the dissemination of accurate scientific knowledge by the press of the nation in cooperation with scientific organizations and individual scientists."

Society News.—A special committee on the revision of the U. S. Pharmacopeia and National Formulary has been appointed to represent the American Academy of Pediatrics, as follows: Drs. Isaac A. Abt, Chicago; William N. Bradley, Philadelphia; Louis W. Sauer, Evanston, Ill., and John Ruhräh, Baltimore.——The seventh annual meeting of the Central Society for Clinical Research will be held in Chicago, November 2-3, at the Medinah Michigan Avenue Club.——The Central States Dermatological Society will hold its annual meeting in Buffalo, November 3.

Meeting of College of Surgeons.—The twenty-fourth clinical congress of the American College of Surgeons will be held in Boston, October 15-19, with headquarters at the Statler and Copley-Plaza hotels. Addresses to be delivered at evening meetings include the John B. Murphy Oration in Surgery by Dr. Donald C. Balfour, Rochester, Minn., on "Principles of Gastric Surgery," and a fracture oration on "The Unsolved Fracture," by Dr. Kellogg Speed, Chicago. Special features of the program will be a symposium on cancer, a fracture conference and one on industrial medicine and traumatic surgery, and a community health meeting.

V 19

Resolution Condemns Indiscriminate Use of Radium.—The American Radium Society at its annual meeting in Cleveland adopted resolutions criticizing commercial laboratories which give advice or directions for the use of radium. The same criticism was applied to institutions that rent or furnish radium to members of their staffs or persons outside the staffs who are unskilled in the application of radium and also to certain individual owners of radium. The society considers approval by the National Board of Radiological Examiners as the minimum standard for those assuming the responsibility of using radium. The resolutions recommended refusal of advertising matter in state and national journals when the firms concerned are advertising a consulting service or are advertising such service through the mails. They further disapproved any physician's association with a firm that carries on such advertising but approved an informal medical consultant for guidance of companies that refrain from advertising such professional service, either publicly or privately. The ethical commercial company is a necessity, the resolutions emphasized; it is the advertised consulting service that is deprecated. Restrictions on the advertising of a medical service will in no way hamper qualified radiologists in obtaining supplies, it was asserted. In another resolution the society stated its belief that it is justifiable to produce a second degree radiodermatitis when it is necessary in order to give sufficient treatment to overcome malignant disease. These resolutions were also approved by the board of chancellors of the American College of Radiology and the Section on Radiology of the American Medical Association.

FOREIGN

Cameron Prize Awarded.—Sir Edward P. Sharpey-Schafer, emeritus professor of physiology, University of Edinburgh, received the Cameron Prize in practical therapeutics awarded by the university in recognition of the advances in therapeutics arising out of his discoveries in endocrinology. Sir Edward, now 83 years old, retired in 1933. He has received many honorary degrees and medals from scientific societies and is widely known as the originator of the Schafer prone pressure method of artificial respiration. The award was made at the recent commencement at Edinburgh.

Congress on Industrial Medicine.—The Seventh International Congress on Industrial Accidents and Diseases will be held in Brussels in July 1935. The congress has been divided into three sections, each of which will deal with two subjects. The section on surgery will consider delayed effects of injuries to the cranium and traumatisms of the hand and fingers; the section on occupational diseases, prevention of industrial dusts and pathologic action of gases escaping from veins of coal mines; and a joint session will take up objective manifestations of pain and electricity. For information address the secretary general of the congress, Dr. Leo Dejardin, 23 Rue de Commerce, Brussels; Dr. Fred H. Albee, 57 West Fifty-Seventh Street, New York, American president of the national committee for the section of accidents, or Dr. Emery Hayhurst, state department of health, Columbus, Ohio, American president of the national committee for the section of diseases.

Government Services

Discontinue Medical R. O. T. C. Units

With the graduation of the last remaining classes in June 1935, all medical department units of the reserve officers' training corps will be definitely discontinued, the war department has announced. According to the announcement, this will complicate the problem of procurement of medical department reserve officers, since these units have been the source of more than 50 per cent of the new appointments in this section of the officers' reserve corps. It is believed that the interest of medical and related personnel in the officers' reserve corps can be maintained by the establishment of proper contact with class A medical, dental and veterinary colleges. Effort should be made to interest young men who have just received their degrees, these applications to be solicited by specially designated contacting officers. Changes in army regulations have been approved which authorize the waiver of the requirement of license and actual engagement in practice of graduates of class A medical, dental and veterinary colleges in cases in which the applicants are commissioned at time of graduation. This permits the commissioning of medical graduates, as has been done in the case of medical students of the reserve officers' training corps in the past.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 8, 1934.

The Prevention of Road Accidents

If the dreadful toll of deaths and injuries on the roads shows no diminution, this is not due to any want of efforts on the part of the authorities. Indeed, it is possible that their efforts are producing effects that are counteracted, or more than counteracted, by the constant increase of automobile traffic. No figures have been published showing the relation of accidents to the amount of this traffic. The latest measure, which is a success, is the marking on the roadway of recognized crossing places for pedestrians, following the example of Paris. If a pedestrian is injured on one of these, the responsibility of the motorist is much increased. The minister of transport, Mr. Hore-Belisha, has set up a standing road safety council, over which he will preside. This body will meet at least once a week. It will be representative of all sections of road users. The first difficulty is to reconcile their conflicting claims. Among the organizations, the principal officers of which the minister has seen, are the Automobile Association, the Royal Automobile Club, the Commercial Road Users Association, the British Road Federation, the National Safety First Association, the Cyclists Touring Club, and the Pedestrians Association. As the result of the conversations all the officers of these bodies have undertaken to help in every possible way to reduce the number of accidents on the road and have readily acceded to the wish that they visualize the problem from a national rather than from a sectional angle. These organizations will combine in the formation of a standing council, which will discuss at regular meetings to be held at the ministry of transport all questions that have heretofore been considered solely from the points of view of the various organizations. To this council will be added representatives of local authorities, the police and the insurance companies. An important matter to which the minister is paying special attention is the obtaining of information regarding places where accidents occur most frequently. Observers will be sent to keep constant watch on "black spots" and to report defects that may be discovered in the control of traffic or obstacles that can be removed. The minister will adopt two methods: He believes that much good can be accomplished by the constant education of the public on the danger of the roads and the precautions necessary for all road users. His second method is regulations as to traffic. His decision to provide crossing places for pedestrians was prompted by the fact that the highest percentage of accidents occur to pedestrians. Since they were introduced into London, only one fatal accident has occurred at one of these crossings. On the other hand, most of the accidents to pedestrians in built-up areas occur where these crossings are some way off. A new order is the forbidding of the use of bicycles to carry more than one person unless it is specially constructed for the purpose.

Another New Cancer Treatment Exploded

Considerable and apparently undeserved space is given in the *Times* to the latest claim of a discovery with regard to cancer. At the Congress of International Science held at Frankfort, Dr. Brehmer claimed that he had discovered a bacterium that causes cancer and was named by him Siphonospora polymorpha. Of Dr. Brehmer's claim it need only be said that it has excited incredulity even in his own country. A practical suggestion based on it has been confuted in England. As this bacterium develops best in a strongly alkaline medium, a treatment for cancer has been suggested, which includes bringing the patient's blood from the alkaline toward the acid side and regulating it

at a p_H between 6.8 and 7.1. In a letter to the *Times* Dr. Samson Wright, professor of physiology in the University of London, points out that this treatment is dangerous and not new. In animal experiments, disturbance of the blood reaction to this extent is always fatal, and in man a similar result is to be expected. Some ten years ago Mr. T. H. Kellock, surgeon to the Middlesex Hospital, which for a century has specialized in the investigation and treatment of cancer, tested the hypothesis that a moderate increase in the acidity of the blood might be of value in the treatment of cancer. But no improvement was observed in any of the patients so treated. Thus this apparently highly scientific work, which occupies nearly two columns of the *Times*, turns out, like a good deal of German investigations of the kind, to be only pseudoscientific.

The Storage of Food

At the annual meeting, at Aberdeen, of the British Association for the Advancement of Science, Sir Frank Smith, secretary of the department of scientific and industrial research, described recent advances that have been made in the storage of food. Most of the work is done at the research station of the department in Torry, Aberdeen, as much of it deals with the fishing industry. A smoking kiln heated by gas or electricity has been evolved to replace the smoldering fire of sawdust controlled simply by the curer himself and still used for converting herrings into kippers. This ancient method is at the mercy of the weather as to temperature and humidity. The Torry plant enables any desired cure to be produced with certainty. The salt cure of herrings has been combined with a process of chilling to produce a mild salted herring.

For the white fish trade—cod, halibut, plaice—investigations have shown how the unsatisfactory trawler storage of the catch in crushed ice can be improved. When landed the catch may be 17 days old, while the crushed ice can hold it fresh for only six or seven days. Research has found a solution by the freezing of the catch in cold brine at minus 20 C., at which temperature the growth of bacteria is completely arrested and the freezing enables the fish to be stored for three months. On thawing it is as good to look at and to eat as if it just came out of the sea.

For halibut a floating factory ship of 10,000 tons has been fitted up for the brine freezing of 4,000 tons of halibut at the rate of 70 tons a day. In May the ship goes to the Davis Straits, off the west coast of Greenland, where the fish are caught. In October it returns to Hull and there acts as a floating store. On the ship cod liver oil is manufactured and halibut livers are frozen and stored. Several other factory ships are at work on this principle.

MEAT FROM ABROAD

In Great Britain $5,000,000 a day is spent on food brought from abroad, and the process that makes this possible is refrigeration. It has been found possible to stop completely the self-induced deterioration of meat by enzymes or organisms naturally present in the meat itself and to stop bacterial infection of the meat sufficiently to keep it good as a food. Mutton, lamb and pork are preserved by freezing, but freezing, as distinct from chilling, is unsatisfactory for beef, as the crystals of ice disrupt the muscle fibers and when the meat is thawed the water is not entirely reabsorbed but drains away and carries with it proteins, salts and pigments. The solution has been found to be carriage of the beef in an atmosphere containing from 10 to 20 per cent of carbon dioxide. Last year under these conditions a cargo of chilled beef was successfully brought for the first time from New Zealand. Rapid developments of this method are now being made by the shipping companies. Carbon dioxide storage also serves for apples and should help to overcome intolerance for cold, shown by the British apple.

PARIS

(From Our Regular Correspondent)

Aug. 22, 1934.

Pensions and Politics

The necessity of establishing the budget of France on a solid basis compels the government to effect all possible retrenchments. One of the heaviest expenditures of the government at present is for war pensions. It is the general opinion that there have been abuses of the pension laws and that these are on the increase. One might assume that since 1914 death would have reduced the number of war victims, but the number actually increases, and the amount of money expended likewise is increasing, for the law permits a pensioner to demand a revision of his pension if he thinks that the state of his health is worse. In this way a shrewd man who succeeded in obtaining an annuity of 10 per cent of his normal salary, by reason of a stubborn cold or an attack of influenza suffered during the war, eventually is granted 50 per cent, or even 100 per cent, of his normal salary if he is able to find a court that will consider him tuberculous. That may result in an annuity of 17,600 francs ($1,144), which may revert, in part, to his wife and to his children, in the event of his death, in addition to many further advantages that the law of 1919, as an expression of a feeling of compassion, accords to all persons who wore the uniform. What is especially objectionable is that, in allowing these increases of pension, no account is taken of the natural result of aging or of possible bad habits of the person applying for an increase. Many gouty, asthmatic and diabetic patients, and even patients with alcoholic cirrhosis, are drawing liberal pensions. Persons hastily considered tuberculous in 1918 and granted a large pension are today in good health, either because the original diagnosis was wrong or because they have succeeded in obtaining a cure. In some instances they have given up their occupation, while, in other cases, if their occupations bring a good yield, they add their pension to their regular income. Moreover, the right to demand a pension remains open indefinitely for any one who thinks that his present bad health had its origin in the war service, even though he never saw any actual fighting, having been merely employed in some office, far from the fighting lines. Irrespective of the time that has elapsed, the law gives him the right to present his claim. His application is examined by one of the special courts established in every department of France. Local political influence is brought to bear on this court, which is thus compelled to be generous. Nearly a billion dollars (almost a fourth of the annual budget) is devoted each year to pensions. It would be an easy matter to clip off two or three billion francs, which would be sufficient to balance the budget. But the pensioners are bound together in powerful political organizations, which exert an influence on the deputies, and when a few wise men demand a revision of war pensions wrongfully granted, they organize a vociferous opposition. Nevertheless, the government recently announced a reduction of 2 per cent in the pensions for disease only. Thereupon these pensioners immediately instituted an organized opposition and paraded the streets, uttering loud shouts in expression of their disapproval. The public contemplates these manifestations with a feeling of melancholy sadness, recalling the heavy taxes they have to pay by reason of these pensions, which they find themselves powerless to combat, in view of the demagogic system of politics that prevails. It is true that the same scandalous conditions are found in other countries, only the governments of Germany and Italy having been able to cope with any success with these deplorable abuses.

Restriction of the Number of Medical Students

Dr. Georges Portmann, professor of otorhinolaryngology at the Faculté de médecine de Bordeaux, elected senator last year,

has introduced a bill designed to limit the number of students to be admitted to the facultés de médecine. In 1930 the dean of the Faculté de médecine de Paris and the general secretary of the Confédération des médecins de France called attention to the deplorable situation in a circular letter addressed to the parents of pupils in the *lycées*, urging them to enlighten their children in regard to the future prospects of those who, under present conditions, take up the study of medicine. The number of physicians in France has increased from 16,815 in 1900 to 27,500 in 1928, whereas in this period the population has increased only two million. In spite of warnings, the situation has grown steadily worse. The number of students enrolled in the French medical schools has risen from 8,182 in 1929 to 9,780 in 1930, 9,842 in 1931, 10,242 in 1932 and 10,338 in 1933. The number of government diplomas issued to doctors of medicine by all the facultés de médecine was 1,076 in 1930, 1,102 in 1931 and 1,397 in 1932. But these figures correspond to the number of students enrolled five or six years previously. It is evident that in five years the number of graduates will be much greater. Overcrowding of the profession is reported from other countries. In Germany the Hitler government has recently decided that the number of medical students, which was 25,000 in 1933, shall be reduced to 15,000 in 1934. The bill proposed by Senator Portmann is not so rigid. It does not fix any maximum. It provides that the total number of medical students to be matriculated be fixed each year, according to the number of civil, army, naval and colonial physicians required, by a commission composed of the minister of public instruction, the minister of public health, the Confédération des syndicats médicaux, and the ministers of war, the navy department and the colonies. The selection would be made in two stages, the first at the end of the preparatory studies leading to the premedical diploma in physics, chemistry and biology, which affords entrance to the facultés de médecine, and the second after completion of the first year of study in the facultés de médecine. Only the number of holders of the premedical diplomas, as fixed by the ministerial commission, plus 50 per cent, would be admitted to the facultés de médecine, and this additional 50 per cent would be eliminated at the end of the first year of medical study. This regulation would concern only candidates for the government diploma, which grants the right to practice medicine in France (and in Rumania). As to the students enrolled for a university diploma, a degree much sought by foreigners, no limitation will be placed on their number; but the later transformation of a university diploma into a state diploma will be made more difficult and will be brought into harmony with the number of state diplomas fixed by the projected legislation.

Amebiasis in Paris

Amebiasis is rare in Paris, but possibly there are more cases than is generally supposed. Professor Lemierre has observed several hundred cases among the civil population in a period of fifteen years. The figures are much higher in the army and in the marine hospitals. The diagnosis is not so difficult as it appears at first. According to Lemierre, one cannot count on discovering pathogenic amebas other than in cases of typical intestinal amebiasis. The discovery of a hyperleukocytosis with neutrophil polynucleosis will be of great aid in distinguishing febrile hepatitis, without characteristic local symptoms, from malaria, typhoid or paratyphoid fever, tuberculosis and undulant fever. But the strongest proof of the amebic nature of the symptoms, when their character permits only a supposition, is the specific action of treatment with injections of emetine. The cases that figure in Lemierre's research show that, in the apparently hopeless cases, emetine works wonders, establishing thus, at the same time, the diagnosis. On the slightest suspicion therefore, he says, the physician should not hesitate to institute an emetine test treatment, which will be harmless if it has no curative effect. The only thing that one need fear is failure to recognize amebiasis when it presents itself.

International Conference on Chronic Rheumatism

An international conference was recently held at Aix-les-Bains, in Savoy, under the chairmanship of Prof. Fernand Bezançon, at which one topic, "Chronic Generalized Progressive Rheumatism," was discussed. In addition to the French members, a considerable number of foreign physicians were present, chiefly English. The conference was only a presentation of individual medical opinions (sometimes contradictory) on the pathogenesis of chronic generalized rheumatism, and no positive conclusions could be drawn from the conflicting papers. Prof. Fernand Bezançon and Dr. Weil endeavored to establish the limits of the pathologic condition termed "rheumatism" and admitted that the limits were rather uncertain in the neighborhood of degenerative osteo-arthritis. Contrary to the opinion of Charcot, the manifestations included under the name of generalized progressive rheumatism do not represent a homogeneous whole. Violence has been done to the facts in describing a symmetrical disease, regularly progressive, with a distal onset and a centripetal course. The deformations are commonplace. The trophic disorders for the most part develop late. There are, however, patients in whom one observes all these characteristics, and for these the authors proposed the term "progressive symmetrical polyarthritis" or, better still, "polyarthropathy"; for there is no direct proof that arthritis exists, in the strict sense of the word, or even that the disease is localized selectively in the joint. As for other cases, the symptoms develop differently. The authors discussed the mode of onset, the date of appearance, the progressive nature and the symptoms. Among these forms there are multiple varieties. From the radiologic point of view, four clinical types may be distinguished, according as there is an absence of radiologic lesions, destruction of articular contour, disappearance of bony segmentation or solely intense and diffuse decalcification. These aspects are not degrees in the morbid evolution; they represent exceptional states. Nevertheless, there is a family resemblance between all these cases. That is due not to the etiologic conditions nor to the state of the humors or the nature of the metabolism but to the conditions of the terrain. It is that which, by the progressiveness of the disease, creates the clinical type. Its cause lies in the mode of reaction of the subject, as a result of which, following the action of any factor—infectious, traumatic, proteinic or otherwise—disorders are produced in a joint, the essential character of which will be a tendency to become generalized.

Following the presentation of the previous paper, Loeper, D. Marchandeau and J. Tonnet considered more particularly the metabolism of rheumatic patients, pointing out in them the excess of sulphur and calcium and the insufficiency of glutathione. Coste of Paris and Jacques Forestier of Aix-les-Bains surveyed the rôle of infectious elements in chronic generalized rheumatism (gonococcus, streptococcus and particularly tubercle bacilli). They scout the idea of a specific micro-organism.

Professor Gunzburg of Antwerp gave a critical survey of the modes of treatment to be applied to the various types of rheumatism. Professor Bach of London, in studying the anatomic aspects of generalized progressive rheumatism, which he called rheumatoid arthritis, attached great importance to the bone changes due to disturbed calcium metabolism. Mr. Scott of London recommended close study of roentgenograms to get an accurate conception of the disease and emphasized also the paramount rôle of decalcification. Professor Mouriquand of Lyons called attention also to the significance of the endocrine factors and the part played by the parathyroids, the

thyroid, the ovary and other organs. Professor Maranon of Madrid discussed at considerable length the diagnosis of various forms of progressive chronic rheumatism. Weissembach and Françon considered the prognosis. Professor Kahlmeter gave his interpretation of examinations of the blood of rheumatic patients. Professors Giraud and Puech of Montpellier presented a comprehensive paper on the thermic treatment of rheumatism.

BERLIN

(From Our Regular Correspondent)

Aug. 13, 1934.

The Cause of Pain in Angina Pectoris

By means of a type of calorimeter the physiologist Rein of Göttingen has succeeded in measuring directly the amount of the coronary blood flow, which it was found varies somewhat from hour to hour, being dependent on the performance of the heart. In contrast with the other vessels that are subordinate to the sympathicus, the coronary vascular system is dependent on the vagus tonus.

In the opinion of Professor von Bergmann, who spoke recently on angina pectoris before the Berlin Medical Society, the pain may be fully explained by the deficiency of oxygen in the heart muscle and the resulting injuries, the partial suffocation resulting in an impaired function ranging from mild oxygen impoverishment, acid formation and slight attacks of angina pectoris to cardiac infarct. Pain conduction is by way of centripetal nerves in the heart. An illuminating demonstration of the importance of the vagus in connection with the coronary blood flow consists in the expansion of the lowest portion of the esophagus by means of a rubber balloon, applied to the dog, which evidently irritates the vagus nerves and precipitates an attack, the same as pressure on the sinus carotidicus; the expansion causes a reflex change in the blood flow. The connection between attacks of angina pectoris and the ingestion of full meals, increases of blood pressure and attacks of emotion is widely known. The electrocardiogram possesses great value as a diagnostic aid for determining the gravity of coronary changes in the heart, and particularly for the diagnosis of the cardiac infarct. The typical changes are the inverted secondary deflection (negative T), the high first deflection, the splitting of the R wave, the iso-electric secondary deflection, and the like. Rabbits poisoned by carbon monoxide and hence deficient in hemoglobin present similar aspects in the electrocardiogram. The von Bergmann "school" found in anemized rabbits anatomic changes in the form of typical necroses of the heart muscle. This observation appears to afford an important basis for the understanding of angina pectoris in man. One can produce also in human subjects the electrocardiogram corresponding to that of angina pectoris; for example, in connection with examinations in the subpressure chamber, such as are instituted in testing persons with reference to their aptitude as aviators. In such tests an artificial process is employed to render the blood deficient in oxygen, and one finds in examinations based on an assumed elevation of from 6,200 to 8,000 meters just such types of electrocardiogram. A further proof lies in the fact that in persons with a tendency to angina pectoris, at an early date, before the appearance of the subjective suffocation phenomena, the typical changes in the electrocardiogram are observable if one allows such persons to breathe between attacks while subjected to a deficiency of oxygen. These changes soon disappear as soon as an adequate supply of oxygen becomes available.

Oxygen deficiency of the heart muscle is shown beyond doubt to be the cause of pain associated with angina pectoris. The causes that lead to a narrowing of the coronary artery and thus to oxygen deficiency are various; for example, a severe hemorrhage from a gastric ulcer may precipitate an attack. The most frequent cause is coronary sclerosis. The terms "angina pectoris falsa," "vera," "minor" and "major" are now no longer needed. Effort angina and angina pectoris ambulatoria, in the light of present-day knowledge of oxygen deficiency of the heart muscle as the precipitating cause of the attack, are readily understood. It is evident, therefore, that coming to a complete standstill on the street is the most suitable therapy in the event of an attack of angina pectoris, since such action gives the heart an opportunity to adapt itself to the oxygen deficiency.

The Heritability of Diseases of the Intestinal Tract

Dr. H. Kalk discussed before the Berlin Medical Society the heritability of diseases of the intestinal tract. In from one fourth to one third of the families of ulcer patients there is a history of diseases of the stomach. There are, moreover, extensive family trees of so-called ulcer families. An ulcerous disease presents itself earlier and in a more severe form when the hereditary trend is strong. Likewise during the course of the disorder (site of the ulcer, hemorrhages, perforation) marked familial aspects are often observable, especially in enzygotic twins. Frequency of sensitive stomach and cancer of the stomach in ulcer families points to a hereditary organic inferiority of the stomach. In carcinoma of the intestinal tract, cases of marked similarity as regards age and site in several members of a family have been observed. In gastritis, the frequent occurrence of sensitive stomach or a tendency to indigestion in certain families makes a hereditary predisposition very probable. Achylia is of frequent occurrence in families with a prevalence of pernicious anemia. A tendency to diarrhea appears to be the result of an inherited easily disturbed vegetative nervous system.

On the side of liver disorders there is a familial prevalence of an increase of the bilirubin content of the blood (constitutional hyperbilirubinemia); the dominant hereditary hemolytic icterus has, however, no connection. Also a familial tendency to icterus is observed. In gallbladder disorders—that is, in the pathogenically closely associated stone disorders, inflammation and disturbance of function of the gallbladder—the symptoms, much as in ulcer disorders, appear relatively early if the hereditary predisposition is marked (usually on the female side).

Criminality in Twins

A previous letter (The Journal, March 31, p. 1098) dealt with research on the subject of criminality in twins. At a meeting of the Deutsche Gesellschaft für Vererbungswissenschaft, Dr. Heinrich Kranz, of the Kaiser Wilhelm Institut für Anthropologie, menschliche Erblehre und Eugenik, announced the results of further research in this field. The examinees were inmates of the Prussian prisons. Up to the present time, twenty-seven enzygotic and thirty-seven dizygotic twins have been studied. In seventeen of the enzygotic groups, both twins had received a sentence for a crime or misdemeanor; in ten of the groups only one of the twins had incurred a penalty. Agreement, or concordance, was evidenced in 63 per cent, and differentiation, or discordance, in 37 per cent. In eighteen dizygotic groups, both twins had received a sentence; in nineteen groups, only one twin (46 per cent and 54 per cent, respectively). The agreement, or concordance, does not run as high as in the researches of J. Lange and of Legras. In the penalized groups of twins the enzygotic groups reveal great similarity in the number of penalties incurred and as to the time when the first penalty was imposed, but less similarity in the severity of the penalties and in the nature of the crimes and misdemeanors. The dizygotic groups show, on the other hand, marked differences in all these points. In the groups composed of a male and a female, the differences between the

enzygotic and the dizygotic groups were less marked. The hereditary influence is therefore strongest with reference to the repetition of the crimes, and next with regard to the time of onset of the criminal conduct. The severity of the penalties and the type of crime committed depend more on environmental influences. Combining the results secured by J. Lange, Legras and Kranz in their examination of twin groups with respect to criminality, one finds thirty enzygotic twin groups concordant and thirteen discordant (70 and 30 per cent, respectively); twenty dizygotic twin groups concordant and thirty-nine discordant (34 and 66 per cent, respectively). A deeper perception of the differences and the similarities in the two groups will be secured when a detailed examination of the individuals has been made.

ITALY

(From Our Regular Correspondent)

Aug. 15, 1934.

Prophylaxis of Ancylostomiasis

During the construction of the railway line from Florence to Bologna, which extended over several years, the prophylactic crusade against ancylostomiasis assumed great importance. The results of this crusade were recently announced in a report of the ministerial sanitary commission, of which Professor Alessandrini, director of the institute of parasitology of the University of Rome, was chairman.

It was necessary to overcome many difficulties in order to prevent the development of larvae in the environs of the workmen. Laboratories were established, and all the workmen were given preventive examinations at regular intervals, particularly those who were engaged in underground work. Likewise, first aid stations were created, with facilities for isolation of patients. The work-yards and the bunkhouses were provided with good drinking water, baths with hot and cold water, and stoves; and periodic disinfection of the premises was instituted.

Owing to the adoption of these measures, not a single case of ancylostomiasis was diagnosed during the construction of the railway, although ova of the helminth were often found in workmen who applied for work. Such applicants were either not employed or were given thorough treatment before they were hired.

Research on Rheumatism

At the International Congress on Rheumatism, in Moscow, Professor Chini of Rome presented a paper prepared in collaboration with Professor Lusena, on the pathology of rheumatism. He endeavored to show that no absolutely reliable evidence has been adduced to prove a streptococcic etiology of rheumatism or a focal and allergic pathogenesis. Nevertheless, in many cases of rheumatism corresponding to the streptococcic rheumatism of Graff, it would seem that the streptococcus played an important part, and these pseudo types of rheumatism find also a counterpart in experimental researches in which the presence of a chronic streptococcic focus, developed heretofore in the rabbit with arthrophile micro-organisms, gives rise to a systemic granulomatosis similar to the rheumatic manifestation in man.

The Academy of Medical Sciences

The Academy of Medical Sciences met recently in Palermo, under the chairmanship of Professor Giuffrè. Mottareale reported the results of his studies on the action of the hematopoietic hormone of the liver, prepared according to the Piazza technic in thirty-three cases of primary and secondary, and plastic and aplastic, anemia. The hormone was administered by the parenteral route in daily doses of 0.04 Gm. In almost all cases, before the appearance of the blood changes, the patients experience a sense of euphoria. Later on, an increase in the number of erythrocytes, or often even a hyperglobulia, becomes manifest. In the primary forms there is observed a gradual disappearance from the circulation of the mature types and a readjustment of the corpuscular values. In these cases, however, when the administration of the hematopoietic hormone is discontinued, the anemia gradually reappears, whereas in secondary anemias, when the normal erythrocyte count is reached, it persists. Often also secondary effects are produced, such as a decrease in the size of the spleen and a clearing up of the skin. In some cases malaria parasites appear in the blood stream, owing to reactivation of a latent process. In some types of aplastic anemia, even prolonged administration of the hematopoietic hormone causes no improvement in the patient's condition. To these forms belong the anemias associated with cancer and those due to Ancylostoma duodenale, in which, however, the nonsusceptibility to hormones is transitory and disappears when the parasite is eliminated.

Piazza, on the basis of studies on the hematopoietic hormone isolated by him, pointed out the existence in the liver of a normal internal secretion that regulates the blood mass by means of a hormone that reacts on the hematopoietic organs. In the pathogenesis of the anemias this internal secretion must be kept in mind and the anemias themselves must be interpreted as hematopoietic insufficiencies due either to insufficient secretion by the liver of the blood-regulative hormone or to insufficient sensitivity to the hormone on the part of the hematopoietic organs. In the latter case, a more than normal stimulus is needed to produce hematopoiesis, a stimulus that the liver is unable to furnish.

Standardization of Methods of Anthropology

The international committee for the standardization of methods in anthropology and eugenics met recently in Bologna, under the chairmanship of Professor Frasseto, director of the Anthropologic Institute of the university. Professor Weninger, director of the Anthropologic Institute of the University of Vienna, spoke on the standardization of the methods of describing external somatic characters, and of the morphologic, anatomic and histologic complexes.

Professor Davenport, director of the eugenics section of the Carnegie Institution in Washington, proposed in his paper some new methods pertaining to anthropometry as applied to living subjects.

Professor Fischer, rector of the University of Berlin, suggested a questionnaire for the study of racial crossings, based on the analytic geneological method. The committee fixed the program of the activity of this new scientific body (S. A. S.). The society will publish a bulletin that will summarize all the publications dealing with anthropologic methodology. Contributions on the researches of societies and of individual investigators of all countries will be solicited. The material thus collected will be evaluated and coordinated and will serve as the basis for the compilation of the Codex Anthropologicus, which will be published by the S. A. S.

Dr. Galegari

The death of Dr. Giovanni Battista Galegari, member of the army medical corps, with the rank of lieutenant general, at the age of 74, is announced. He was for many years department head in the Ospedale di Milano. During the war he was director of the army medical corps and distinguished himself by the organization of the crusade against cholera and exanthematic typhus. He was the director, in succession, of the sanitary service of two armies. After the war he served for years as general director of the army medical corps, in the ministry of war.

Marriages

ROY ELVIN NICODEMUS, Danville, Pa., to Miss Geraldine Frances Sullivan of Elmira, N. Y., in New York, August 3.

ALBERT WARREN KITTS, Kennett Square, Pa., to Miss Ann Stambaugh of Philadelphia, in Middlesboro, Ky., recently.

GILBERT MORTIMER HALPERN, Honolulu, Hawaii, to Miss Dorothy C. Waters of Philadelphia, July 5.

JOHN LEONARD PROBASCO, Bloomington, Ill., to Miss Laurastine Welch of Lexington, August 18.

LOVICK WILSON PIERCE, Brunswick, Ga., to Miss Julia Carmichael Bell of Augusta, August 6.

JOHN ROBERT HARDING, Cincinnati, to Miss Esther Beatriz Garcia of Tampa, Fla., September 1.

ERWIN H. GRUMKE, Lime Ridge, Wis., to Miss Alma M. Schroeder of Madison, September 1.

CLIFFORD HOGAN STRIPLING to Miss Louise Bennett, both of Jacksonville, Texas, July 27.

LLOYD M. SOUTHWICK to Miss Ruth Tarpley, both of Edinburg, Texas, September 1.

CARL A. S. GUNDERSON to Miss Modesta Elmer, both of Madison, Wis., August 28.

MICHAEL GLEASON, Mendota, Ill., to Miss Celeste Brahaney of Buffalo, September 4.

HENRY H. SLATER to Mrs. Emma A. Johnson, both of Deer Park, Wash., July 7.

EDWARD MARKEY PULLEN to Miss Joan Travers, both of New York, June 30.

LESLIE LORAN HUNTLEY, Omaha, to Miss Mary Bergdall in Chicago, July 7.

ROBERT F. PURTELL to Miss Florence McCormack, both of Milwaukee, June 6.

ARNOLD W. HACKFIELD to Miss Margaret I. Donley, both of Seattle, July 10.

HENRY W. KASSEL to Miss Marie Lasley, both of Kansas City, Kan., June 9.

JOHN STEPHEN WITKOWSKI, Niagara Falls, N. Y., to Miss Kubala, May 30.

AMBLER CASKIE PRUNER to Mrs. Ross Shotwell, both of Omaha, recently.

JOEL W. BAKER to Miss Mary Elizabeth Russell, both of Seattle, July 26.

Deaths

Malcolm A. Bliss, St. Louis; Chicago Medical College, 1891; an Affiliate Fellow of the American Medical Association; member of the American Neurological Association and the American Psychiatric Association; formerly a dentist; at one time instructor in clinical psychiatry, Washington University School of Medicine; formerly member of the board of managers of the State Eleemosynary Institutions of Missouri; served during the World War; for many years on the staffs of the City Hospital, City Sanitarium, St. Luke's, Jewish and DePaul hospitals; aged 71; was found dead, September 4, of coronary sclerosis.

Charles Victor Roman, Nashville, Tenn.; Meharry Medical College, Nashville, 1890; emeritus professor of ophthalmology, otology and laryngology and professor of medical history and ethics at his alma mater; past president of the National Medical Association; co-founder of the John A. Andrew Clinical Society, Tuskegee Institute, Tuskegee, Ala.; at one time director of the department of health, Fisk University; member of the board of directors of the George W. Hubbard Hospital; aged 70; died, August 25, of cerebral hemorrhage.

Frederick W. Sears, Syracuse, N. Y.; Syracuse University College of Medicine, 1886; member of the Medical Society of the State of New York; professor emeritus of hygiene and sanitation at his alma mater; past president of the Onondaga County Medical Society; district state health officer; formerly health officer of Syracuse; for many years on the staff of the Syracuse Memorial Hospital; aged 75; died suddenly, August 31, in the Murray Hospital, Butte, Mont., of cerebral hemorrhage.

James Joseph Mooney, Buffalo; Niagara University Medical Department, Buffalo, 1890; member of the Medical Society of the State of New York and the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; on the staffs of the Buffalo Hospital of the Sisters of Charity, St. Mary's Infant Asylum and the Buffalo City Hospital; aged 69; died, September 4, of myocarditis and cardiac decompensation.

Thomas Weston Chester, Hartford, Conn.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895; member of the Connecticut State Medical Society and the New England Obstetrical and Gynecological Society; fellow of the American College of Surgeons; on the staff of the Hartford Hospital; aged 68; died, August 22, in Columbia, of coronary thrombosis.

James Harvey Seymour ✠ Los Angeles; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1883; formerly professor of surgery and clinical surgery, University of Southern California Medical Department; fellow of the American College of Surgeons; visiting surgeon to the Los Angeles General Hospital; aged 64; died, August 13, in the California Hospital following an operation for intestinal obstruction.

George Christian Schaeffer, Columbus, Ohio; Miami Medical College, Cincinnati, 1896; formerly assistant professor of ophthalmology, Ohio State University College of Medicine; fellow of the American College of Surgeons; served during the World War; on the staffs of the Children's, Grant, Mount Carmel and White Cross hospitals; aged 64; died, August 12, in Laporte, Ind., of carcinoma.

Ralph Witt Staley ✠ Cincinnati; Medical College of Ohio, Cincinnati, 1901; member of the American Urological Association; assistant professor of urology, University of Cincinnati College of Medicine; served during the World War; on the staffs of the Cincinnati General and St. Mary's hospitals; aged 55; died, August 29, of heart disease.

Joseph Henry Branham, Rehoboth Beach, Del.; College of Physicians and Surgeons, Baltimore, 1879; at one time professor of clinical surgery, University of Maryland School of Medicine, Baltimore; formerly on the staff of the Franklin Square Hospital, Baltimore; aged 77; died, August 19, in the Beebe Hospital, Lewes, of bronchopneumonia.

James Brown Kinnaird, Lancaster, Ky.; Bellevue Hospital Medical College, New York, 1882; member, for many years treasurer and at one time vice president of the Kentucky State Medical Association; formerly secretary of the Garrard County Medical Society; for many years member of the city council; aged 77; died, July 24, of arteriosclerosis.

Alto Freed Mahoney, Monroe, N. C.; University of Louisville (Ky.) School of Medicine, 1911; member of the Medical Society of the State of North Carolina; served during the World War; medical director and superintendent of the Ellen Fitzgerald Hospital; aged 47; died, August 29, in a hospital at Charlotte, of pernicious anemia.

John B. Bond, Martin, Tenn. (licensed in Tennessee in 1907); for many years director of the bureau of vital statistics, state department of health; formerly health officer of Obion County; at one time superintendent of the Western State Hospital, Bolivar; aged 60; died, September 2, in Nashville, of heart disease.

Irving Ferguson Barnes, Oyster Bay, N. Y.; University of the City of New York Medical Department, 1890; member of the Medical Society of the State of New York; for many years medical inspector of the local schools; aged 67; died, September 6, in a hospital at Winsted, Conn., of cerebral hemorrhage.

Charles Lane Hincher ✠ Rochester, N. Y.; Johns Hopkins University School of Medicine, Baltimore, 1907; served during the World War; aged 58; on the staffs of the Strong Memorial Hospital, Monroe County Hospital and the Rochester General Hospital, where he died, August 26, of heart disease.

George Roeder, Omaha, Neb.; Omaha Medical College, 1892; member of the Nebraska State Medical Association; veteran of the Spanish-American War; formerly on the staff of St. Francis Hospital, Grand Island; aged 72; died, August 29, of pneumonia, following a fractured arm sustained in a fall.

Montgomery Thomas McCulloch, Elkton, Va.; Medical College of Virginia, Richmond, 1907; member of the Medical Society of Virginia, and formerly councillor of the Tenth District; past president of the Botetourt County Medical Society; aged 54; drowned, July 14, while fishing.

John Hancock Fuchsius ✠ New Rochelle, N. Y.; Bellevue Hospital Medical College, New York, 1889; veteran of the Spanish-American War; aged 65; on the staff of the New Rochelle Hospital, where he died, September 5, of carcinoma of the cecum and intestinal obstruction.

Clarence Earl Smart, Granville, Ill.; Chicago College of Medicine and Surgery, 1917; member of the Illinois State Medical Society; served during the World War; on the staff of St. Margaret's Hospital, Spring Valley; aged 45; died suddenly, August 30, of cerebral hemorrhage.

Harry John Thompson, Indianapolis; Harvard University Medical School, Boston, 1894; served during the World War; on the staff of the Veterans' Administration Facility; aged 65; died, August 12, at his summer home in Culver, of injuries received in an automobile accident.

Jesse Nathaniel Roe, Riverside, Calif.; University of Buffalo School of Medicine, 1908; member of the California Medical Association; formerly on the staffs of the Memorial, Lafayette, General and City hospitals, Buffalo; aged 62; died, August 4, of coronary thrombosis.

Oscar La Borde, Columbia, S. C.; Medical College of the State of South Carolina, Charleston, 1905; member of the South Carolina Medical Association; on the staffs of the Columbia and South Carolina Baptist hospitals; aged 55; died, July 31, of chronic myocarditis.

Edward J. Libbert ⊕ Aurora, Ind.; Cincinnati College of Medicine and Surgery, 1889; for more than six years mayor of Aurora; secretary and past president of the Dearborn-Ohio County Medical Society; aged 65; died, August 2, of heart disease.

Clarence Hugh Harwood ⊕ Charleston, Ill.; University of Louisville (Ky.) School of Medicine, 1910; formerly mayor; medical director and part owner of the Oakwood Hospital; aged 51; was killed, September 1, in an automobile accident.

Warren F. Eckles, York, Neb.; College of Physicians and Surgeons, Keokuk, Iowa, 1898; member of the Nebraska State Medical Association; on the staff of the Lutheran Hospital; aged 60; died suddenly, August 16, of angina pectoris.

John Willis Macy ⊕ Boston; State University of Iowa College of Medicine, Iowa City, 1928; member of the Minnesota State Medical Association; associated with the Lahey Clinic; aged 32; died, August 10, of ulcerative colitis.

Hansford Hall Milbee ⊕ Marshfield, Wis.; Trinity Medical College, Toronto, Ont., Canada, 1896; president of the Marshfield Clinic; aged 63; surgeon in chief at St. Joseph's Hospital, where he died, August 21, of heart disease.

Frank Joseph Patera ⊕ Chicago; Rush Medical College, Chicago, 1883; on the staff of St. Mary of Nazareth Hospital; aged 73; died, September 12, at Rhinelander, Wis., of hypertrophy of the prostate gland and chronic nephritis.

J. Ralph La Rue Redfield, Bangkok, Siam; Jefferson Medical College of Philadelphia, 1919; for many years connected with the public health department of the Siamese government; aged 49; died, July 17, of pneumonia.

Loftus Harley Francis, Cotati, Calif.; California Eclectic Medical College, Los Angeles, 1897; member of the California Medical Association; aged 75; died, July 27, of uremia, diabetes mellitus and adenocarcinoma of the prostate.

Jose Lisandro Medina, New York; University of the City of New York Medical Department, 1891; Nicaraguan vice consul; aged 70; on the staff of the French Hospital, where he died, August 25, of bronchopneumonia.

John W. Rodwell, Mocksville, N. C.; College of Physicians and Surgeons, Baltimore, 1895; member of the Medical Society of the State of North Carolina; aged 68; died, August 12, in a hospital at Charlotte, of nephritis.

Matthew Blair St. John, Bristol, Tenn.; Hospital College of Medicine, Louisville, Ky., 1903; aged 55; died, August 19, in the George Ben Johnston Memorial Hospital, Abingdon, Va., of acute dilatation of the heart.

Byron Francis Dawson, Los Angeles; University of Michigan Medical School, Ann Arbor, 1886; Jefferson Medical College of Philadelphia, 1897; aged 76; died, August 21, of arteriosclerosis and nephritis.

Joseph William Forshey, Lowell, Ohio; Starling Medical College, Columbus, 1903; member of the Ohio State Medical Association; aged 64; died, August 16, of heart disease, arteriosclerosis and hypertension.

Earl Wayne Gayer, Rochester, N. H.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1907; aged 52; died, August 16, of uremia, diabetes mellitus and chronic nephritis.

Rowland Rodman Robinson ⊕ Wakefield, R. I.; Harvard University Medical School, Boston, 1888; veteran of the Spanish-American War; aged 72; died, August 26, of carcinoma of the liver.

Abraham Le Witt, Hartford, Conn.; Cornell University Medical College, New York, 1900; member of the Connecticut State Medical Society; aged 62; died, August 11, of arteriosclerotic heart disease.

Samuel S. Gross, Denton, Kan.; Kentucky School of Medicine, Louisville, 1894; Ensworth Medical College, St. Joseph, Mo., 1909; aged 59; died, July 21, in Lawson, Mo., of a self-inflicted bullet wound.

Frederick Kenan ⊕ Upper Sandusky, Ohio; Starling Medical College, Columbus, 1906; past president of the Wyandot County Medical Society; aged 59; died, August 15, of coronary embolus.

Levi Samuel Long ⊕ St. Joseph, Mo.; Baltimore Medical College, 1892; formerly on the courtesy staff of the Missouri Methodist Hospital; aged 62; died, August 10, of cerebral hemorrhage.

Martin A. Kleinhans ⊕ Milwaukee; Milwaukee Medical College, 1902; aged 60; died, August 4, in St. Mary's Hospital, of chronic myocarditis, carcinoma of the sigmoid and intestinal obstruction.

John Joseph De Vereaux, Warrenton, Mo.; Barnes Medical College, St. Louis, 1907; also a pharmacist; served during the World War; aged 53; died, August 18, of coronary occlusion.

Paul Greene Rowand, New Canaan, Conn.; University of Vermont College of Medicine, Burlington, 1934; aged 24; died, July 3, in Montreal, Que., Canada, of aneurysm of the circle of Willis.

Oscar Charles Reeve, Oakland, Calif.; University of California Medical Department, San Francisco, 1905; aged 58; died, July 19, of Buerger's disease, arteriosclerosis and coronary disease.

Constantine S. Krysinski, Chicago; Hering Medical College, Chicago, 1909; for many years on the staff of St. Elizabeth's Hospital; aged 47; died, August 1, of carcinoma of the lung.

Robert Lee Hammond, Frederick, Md.; University of Maryland School of Medicine, Baltimore, 1882; aged 72; died, August 20, of chronic nephritis, arteriosclerosis and myocarditis.

Thomas P. Birdsall, Newburgh, N. Y.; New York Homeopathic Medical College, 1878; aged 78; died, August 2, of cerebral arteriosclerosis, chronic nephritis and myocarditis.

Alfred Preston Bowen, Lynn, Mass.; Harvard University Medical School, Boston, 1904; formerly on the staff of the Lynn Hospital; aged 57; died, August 22, of heart disease.

Frank Eyre, North Henderson, Ill.; University of Pennsylvania School of Medicine, Philadelphia, 1876; aged 80; died, August 18, of heat exhaustion and myocarditis.

Richard Alexander Feild, Enid, Okla.; Bellevue Hospital Medical College, New York, 1880; aged 80; died, August 14, of pulmonary edema following cerebral hemorrhage.

Linneus Alton Roberts ⊕ Boston; Dartmouth Medical School, Hanover, N. H., 1893; aged 66; died, August 23, in the Charlesgate Hospital, Cambridge, of embolism.

Harvey Toor Olsan, Los Angeles; University of California Medical School, San Francisco, 1930; aged 29; died, July 5, of teratoma of the testicle with metastasis.

Oral De Witt Cunningham ⊕ Rockford, Ill.; State University of Iowa College of Medicine, Iowa City, 1924; aged 36; died, September 10, of agranulocytic angina.

J. Frank Heath, La Harpe, Kan.; University Medical College of Kansas City, Mo., 1905; aged 65; died suddenly, September 1, at Lane, of coronary thrombosis.

Marion Balfour Rockwell, Amherst, Mass.; University of Edinburgh Faculty of Medicine, Edinburgh, Scotland, 1899; aged 61; died, August 15, of carcinoma.

Jonathan Alfred Kackley, Pleasant City, Ohio; Columbus Medical College, 1882; aged 77; died, August 23, in the Wells Hospital, Cambridge, of heart disease.

L. William Ray, St. Louis; University Medical College of Kansas City, 1901; aged 64; died, July 23, in the Firmin Desloge Hospital, of heat prostration.

George Edward Routh, St. Paul; Miami Medical College, Cincinnati, 1878; aged 87; died, July 23, of myocarditis, bronchopneumonia and arteriosclerosis.

William Isaac McCowan, Navarre, Ohio; Medico-Chirurgical College of Philadelphia, 1909; aged 53; died, July 22, of carcinoma.

Louise Ross, Washington, D. C.; Boston University School of Medicine, 1907; aged 61; died, August 9, of pyelitis.

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the composition; (4) the type of nostrum; (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Dr. Gardner's Kidneyaid.—G. S. Cheney Co., Inc., Boston. Composition: Essentially pipsissewa leaves, althea root, sassafras bark and triticum. For Bright's disease, kidney, liver, bladder and blood disorders. Fraudulent therapeutic claims.—[*N. J. 20936; June 1934.*]

Ferrac.—Greenville Products Co., Greenville, Ala. Composition: Essentially sulphates of iron, aluminum, lime, magnesium, sodium and potassium, with water. "Tonic." Fraudulent therapeutic claims.—[*N. J. 20937; June 1934.*]

Exto-Rac.—Greenville Products Co., Greenville, Ala. Composition: Essentially sulphates of iron, aluminum, lime, magnesium, sodium and potassium, with water. For eczema, sores, douching purposes, etc. Not antiseptic. Fraudulent therapeutic claims.—[*N. J. 20937; June 1934.*]

Radium Cone No. 3.—Radium Cone Co., Long Beach, Cal. Composition: A brick containing radium, yielding 32.6 millimicrocuries of radon when left in one gallon of water eighteen hours. For indigestion, systemic poisons, rheumatism, etc. Fraudulent therapeutic claims.—[*N. J. 20944; June 1934.*]

P. C. Ointment.—Pacific Coast Proctological Clinic, Los Angeles. Composition: Essentially zinc oxide and volatile oils, including menthol, camphor and tar oils, in a petrolatum base. For hemorrhoids, rectal ulcers, boils, carbuncles, etc. Fraudulent therapeutic claims.—[*N. J. 20945; June 1934.*]

Nofal.—Lifol Co., Tulsa, Okla. Composition: Essentially coal tar creosote, rosin soap, alcohol and water. For eczema, falling hair, pyorrhea, etc. Fraudulent therapeutic claims.—[*N. J. 20948; June 1934.*]

THE CLAYTON E. WHEELER FRAUD

Another Piece of Mail-Order Quackery Debarred from the Mails

Clayton E. Wheeler, M.D., of San Francisco and Los Angeles has for some years been carrying on a piece of mail-order quackery of the "gland-rejuvenation" type. In October, 1928, the California State Board of Medical Examiners revoked Wheeler's license to practice. In November, 1928, Judge Griffin vacated and set aside the Board's order. In May of this year, after an extensive hearing, the Post Office Department declared Wheeler's mail-order scheme a fraud and debarred it from the United States mails.

The first record in the files of the Bureau of Investigation of the Wheeler quackery was a full-page advertisement appearing in the Sunday magazine section of the Los Angeles *Times*. The advertisement purported to be a write-up by one Joseph D'Gee. According to this person—if there is such a person—Wheeler's treatments in chronic cases "gave favorable reaction immediately in some cases, bordering on the miraculous." According to the same report:

"Human efficiency is prolonged by improving physical strength and by the restoration of mental activity.
"The acuity of senses is regained and improved.
"Hardening of the arteries and high blood pressure are alleviated.
"Premature old age or actual senility is deferred.
"Mental depression is removed.
"Life's clock is turned back a number of years."

During the past ten years Wheeler has advertised extensively, his advertisements appearing not only in the Los Angeles *Times*, but in the San Francisco *Examiner, Chronicle, Bulletin, Call and Post*, and others. In addition to full-page newspaper advertisements, which must have cost Wheeler tens of thousands of dollars, he has put out booklets puffing himself and his alleged treatments. It should be mentioned at this point that in addition to his mail-order quackery, Wheeler apparently has conducted so-called clinics. In the case of the clinics, if his advertisements are to be believed, his "treatment" consisted of the "injection in the walls of the abdomen of the gland needed."

As the injection treatment was obviously unsuited to the mail-order scheme, Wheeler sent to his dupes through the United States mails suppositories which were purported to contain certain glandular substances. The suppositories, which were to be used per rectum, according to Wheeler's own claim at the federal hearing, contained the following desiccated material:

Thyroid gland tissue	¼ grain
Whole pituitary tissue	1½ grains
Testicular substance	.5 grains
Liver substance	.5 grains
Prostatic substance	.2 grains
Suprarenal Substance	.1 grain

The quantities given were said to represent the amount in each suppository and totaled, it will be noted, 14¼ grains. The government analyst, however, who testified at the hearing declared that actually there was only 1½ grains of protein matter in the suppositories that Wheeler sent out, and in at least one of the samples examined, the animal tissue was found to be largely composed of striated muscle fibers and not glandular tissue at all!

In addition to twenty-six suppositories that constituted the "treatment," Wheeler also sent to his victims four tubes containing semi-liquid matter. The tube had a small rectal tip and the instructions were to use one tube a week, injecting the material into the rectum. According to the government analyst, the tubes contained some protein matter, with a small amount of phenol (carbolic acid) as a preservative. The suppositories, it should be added, contained, in addition to their animal tissue, some strychnine and brucin.

In Wheeler's booklets he published a picture of San Quentin prison and under it carried the statement: "Where Dr. Wheeler conducted research and gland experimental work with excellent results." It was brought out at the hearing that Wheeler never had any official connection with San Quentin prison and never conducted any research or experimental work in that institution. In fact, Wheeler admitted at the hearing that he had never performed any such operations at San Quentin.

Elsewhere in the same booklets Wheeler devoted a whole page to pictures of laboratory equipment which was described in the legend under the pictures as "Dr. Wheeler's Experimental Laboratory for Goat Serums." The facts of the matter were, according to information furnished by Dr. Pinkham of the California State Board of Medical Examiners, the pictures were actually those of a cocoa-butter suppository manufacturing plant of the A. E. Schmidt Company of San Francisco. The equipment had no more to do with "goat serums" than it had to do with making diphtheria anti-toxin.

Still elsewhere in the same booklets were pictures of Catalina Island and of some of the wild goats that are found there. Wheeler gave the impression that from 40,000 to 50,000 wild goats on Catalina Island had been made available to him for his gland work. On another page of the same booklet were pictures of Guadeloupe Island, showing huge numbers of "goats awaiting transportation." According to Wheeler, he had entered into a contract with "the owners of practically all the herds of wild goats on Guadeloupe Island" for his exclusive use. On still another page Wheeler reproduces a photograph of his private yacht—Yes, quackery pays!—in which he claimed to make "frequent trips to Guadeloupe Island." In this connection the following quotation from the memorandum of the Solicitor of the Post Office Department to the Postmaster-General in the Wheeler case is of interest:

"With respect to the statements in respondent's advertising literature relative to huge herds of wild goats on Catalina Island being made available to him, it appears that the testicular substance which Dr. Wheeler claims to use, does not come from such herds. The statement in the literature with respect to obtaining goats from the Island of Guadeloupe is also false, as Dr. Wheeler admitted to the post office inspector that he was not obtaining goats from that island."

The advertising, of course, carried the usual collection of testimonials. From these the public was led to believe that Wheeler's treatment would not only restore youth, but would cure pernicious anemia, arthritis, asthma, bronchitis, rheuma-

tism, lumbago, bronchial trouble, diabetes, paralysis agitans, sciatica, high blood pressure, heart trouble and other disorders and diseases.

It is worth noting in this connection that Wheeler claimed —via the testimonials—to cure angina pectoris. The government report shows that Wheeler did not believe sufficiently in his own magic to use it upon himself. Wheeler has suffered from angina pectoris for several years, having three or four attacks yearly, but always relies on the treatment prescribed by physicians for the relief of his attacks!

Following the hearing, Judge Karl A. Crowley, Solicitor for the Post Office Department, declared that Wheeler's scheme was one for "obtaining money through the mails by means of false and fraudulent pretenses, representations and promises." He recommended the issuance of a fraud order against "Clayton E. Wheeler, A.B., M.D., Dr. C. E. Wheeler, Dr. Clayton E. Wheeler, Dr. Clayton E. Wheeler, Surgeon, Clayton E. Wheeler, M.D." at San Francisco and Los Angeles. Acting Postmaster-General W. W. Howes issued such an order May 2, 1934.

Correspondence

A DEFENSE OF SUPRAPUBIC PROSTATECTOMY

In a recent contribution to THE JOURNAL (Young, H. H.: Transurethral Resection of the Prostate, THE JOURNAL, June 9, p. 1913) a slight error credits me with a death rate of 40 per cent following the operation of suprapubic prostatectomy. The error would not be worth comment had it not elicited from a number of kindly disposed urologists protests that exhibit a misconception of certain social phenomena that underlie the ancient dispute between the prostatectomists, perineal and suprapubic, as well as the modern antagonism between the champions of prostatectomy and those of prostatic resection.

Operations owe their initial vogue to advertisement. The adjective "conservative" attributed by Dr. Young to the operation of perineal prostatectomy, for example, conveys an aroma of sexual immortality most enticing to the aging male. In the history of prostatic surgery there have been a large number of operative procedures (most of them covering incompetence to do a successful prostatectomy) popularized through the enthusiasm of their originators. The medical journals of a generation ago tell us that castration was then an ideal! Thereafter came Bottini, Chetwood, perineal prostatectomy, the Young punch, and so on.

But, vain mortals, we do not report our failures! No one with a 40 per cent prostatectomy mortality will be rushing into print. We cease to perform those operations that give us bad results and often enough we find it untactful to publish any criticism of them. Thus castration, the Bottini and the Chetwood operations—not to mention the moribund—have died what might be termed a natural death.

Alas, it seems as though perineal prostatectomy, the most beautiful of all the prostatectomies, is also doomed! Surely no one would prefer a two-stage suprapubic prostatectomy, even the modern, clean operation, with its longer hospitalization and correspondingly higher mortality (for to Dr. Young himself we owe the observation that the senile prostatic must be got out of bed) to the beautiful dissection of which Dr. Young is master—except for the fact that in other than the most skilful hands the perineal operation is too uncertain. We present our regrets to Proust, to Albarran, to Wildbolz, to Hinman, to all the other honest gentlemen who have labored so well between "wind and water." They have opened a delightful operative field, which with the disappearance of perineal prostatectomy, vesiculectomy, radium implantation, threatens to become a lost region.

But prostatic retention must be treated by many surgeons who have not had the good fortune to learn or the constant opportunity to practice perineal operation with due respect for the rectum and for the sphincters. Such men must operate "above the bone." They must cling to that operation which alone provides fool-proof drainage; in which no slightest slip entails the dangers of rectal perforation, urinary dribbling, prostatic sepsis; and which gives an adequate insurance against pelvic infection.

Dr. Young mentions again (*loc. cit.*) his surprising record of 198 successive perineal prostatectomies without a death. Other operators, perineal, suprapubic, resecting, have usually stopped at 100 deathless cases, for there comes a time when one attempts too much and the record falls. The wise prostatic operator will do the best he can for each patient by whatever operation he prefers, considering what the patient's life will be worth to him if he survives, as compared to its worth without operation.

As a matter of fact, none of us operate on all our prostatic patients. Some of them escape operation to die of intercurrent disease, some die of their retention before operation is reached. Operative statistics are but part of the picture, sometimes an insignificant part except so far as they conserve our professional vanity. The social aspects of the disease are, on the contrary, of the greatest interest. What operation can best be done by the greatest number of operators? What should be our treatment for the wealthy, for God's friends, the poor?

My impression as to the answer to the first question has been suggested. Time will tell. But as to the second—which gets us back to the "40 per cent mortality"—I have more positive views. During the period in command of the Bellevue Hospital Urological service (1915-1924) I felt that the prostatics who entered that city institution, wrecked by privation and utterly bad risks as many of them were, should be afforded treatment that would send them out cured, if at all. They could not afford post-hospital care. Many of them had no families; many, indeed, no proper homes. To discharge them from the hospital with catheter or suprapubic tube seemed as pitiful as to send them forth dribbling or with a cloaca. A study of our Bellevue statistics led to the publication of "The Prospects of the Prostatic" (Keyes, E. L.: *Pennsylvania M. J.* **33**:672 [July] 1930). Evidently our elucidation at that time was inadequate. We venture to try again.

THE PROSPECTS OF THE PROSTATIC WITHOUT OPERATION

The following data are from the case books of private patients treated by my father or by Dr. Fuller (and a few by Dr. Chetwood or myself) before 1900. Operations were few and performed only in advanced cases. The operative mortality was about one in three. (Freyer, passing his finger nonchalantly from rectum to suprapubic wound *but providing "stove-pipe" drainage*, was the first to bring the mortality of suprapubic prostatectomy within reasonable limits.) Our cases number about 240.

The expectation of life from the first symptom to chronic complete retention was

For patients under 50 years of age at onset.....	6 years
For patients between 50 and 60.....	4 years
For patients over 60.....	2 years

No attempt was made to estimate the expectation of catheter life. It seemed brief and miserable.

One hundred and twenty patients (about 50 per cent) had acute complete retention of urine at some time, and in about half of them this was the initial symptom.

Twenty-seven of these acute retentionists resumed approximately normal bladder function. They averaged 57 years of age at the time of the acute retention. This usually recurred within the year, though four patients insisted that they had gone ten years between retentions.

Fifty-seven went into incomplete retention. Their average age at the time of the acute retention was 60 years. The oldest of this group was 73.

Thirty-six remained in complete retention. The average age was 70.

These age differences are attributable rather to progressive weakening of the bladder muscle with age than to increasing size of the prostate. The rate of growth of prostatic hypertrophy varies greatly, but the gland seems usually to attain its maximum size at about the seventieth year. Conceivably sexual peace settles on it by this time—the palpable size of the prostate being dependent in some measure on congestion.

PROSTATIC MORTALITY BEFORE AND AFTER PROSTATECTOMY

At the Bellevue Hospital between 1915 and 1924 there were eighteen operating surgeons on the staff, including the residents who were doing their first prostatectomies. The favored operation was two-stage prostatectomy, though many one-stage operations and a few perineal operations were done. As stated, every effort was made not to send the patients out with catheter or suprapubic tube. There were 175 prostatics—

175 prostatics
26 not operated on, of whom 14 were relieved and 12 died
98 suprapubic drainage, of whom 33 died and less than a dozen left the hospital with permanent drainage; the remainder had prostatectomy
110 prostatectomies, in which 40 died. (Is this the "40 per cent"?)

The total mortality at Bellevue, therefore, for eighteen operators, many of them beginners, and on the worst possible material, was 35 per cent for the prostatectomies and 49 per cent for the prostatics.

Six years passed before I could face publication of this record. Then, learning that in the city hospitals of two other large cities the prostatic (not the operative) mortality was, respectively, 45 and 47 per cent, and having got some notions that promised to better this sad state of affairs, I published the statistics together with a more recent series, consolatory in character, the work of myself and three other surgeons at St. Vincent's Hospital.

The patients in this St. Vincent's series were mostly private patients. Almost all were operated on by two-stage prostatectomy.

There were 76 prostatics
10 were not operated on, of whom 3 died and 7 left the hospital relieved
After suprapubic drainage 4 died and 1 refused prostatectomy
61 prostatectomies resulted in 53 cures, 5 partially relieved, 3 deaths

This brief series can therefore be reported as showing 5 per cent prostatectomy mortality, or 14 per cent mortality among prostatics, or as 70 per cent cures; 10 per cent left the hospital and 10 per cent died before prostatectomy; 10 per cent died or were not wholly relieved by prostatectomy.

"The Prospects of the Prostatic" achieved its purpose of drawing attention to the prostatic problem. Dr. Stevens has markedly improved the prostatic prognosis at Bellevue. He has kindly permitted me to publish his results for 1926-1934. They are as follows:

813 prostatics, of whom 188 (22.6 per cent) died
614 were operated on, of whom 131 (21.3 per cent) died
199 were not operated on and 57 died shortly after admission
56 had only a vasotomy, of whom 27 died
15 perineal prostatectomies, after which 3 (20 per cent) died
208 one-stage prostatectomies, after which 19 (9.6 per cent) died
272 suprapubic cystotomies, after which 60 (22 per cent) died and 33 returned home, while:
172 had suprapubic cystotomies, of whom 19 (10 per cent) died

In the year 1931 I published a technic for two-stage prostatectomy, recording 113 prostatectomies (personal) with 6 (5 per cent) deaths (Keyes, E. L.: The Preventable Infections Incident to Preparing for Prostatic Operations, *New England J. Med.* **204**:906-910 [April 30] 1931). Beer has noted that the 5 per cent mortality in his clinic is not far from the normal expectancy.

With clean suprapubic wounds our results both as to stay in the hospital and mortality are constantly improving. We can now teach prostatectomy without disaster. My associate Dr. McLellan has performed his first thirty-four two-stage prostatectomies with one death due to cancer of the rectum.

Upon this harmony irrupts the criticism of Dr. Young:

> With the passage of time the ultimate mortality of the suprapubic route has been shown to be much too high. The preliminary cystotomy alone has presented a sizable mortality. Keyes has frankly acknowledged a mortality of 40 per cent in his series of suprapubic prostatectomies. . . .

We feel he leaves a false impression.

EDWARD L. KEYES, M.D., New York.

[The statement by Dr. Keyes was referred to Dr. Hugh H. Young, who replies:]

To the Editor:—When I stated that Dr. Keyes' mortality was 40 per cent, I was in error, and I apologize. I should have said his clinic, as he states that "in a hospital in which a series of patients operated upon under my eye by 18 different surgeons, there were 175 patients, chiefly operated upon by two-stage prostatectomy and 85 (49 per cent) did not leave the hospital alive. Among these 26 were not operated upon, and 12 died. Ninety-eight were drained suprapubically and 33 died. One hundred and ten prostates were removed with 40 deaths." Again, in his textbook, he states, "In free city hospitals . . . the total mortality approaches 50 per cent." In another paper he says, "At Bellevue Hospital . . . the mortality is 49 per cent."

Dr. Keyes says, "Dr. Young mentions his surprising record of 198 successive perineal prostatectomies without a death. Other operators . . . have usually stopped at 100 deathless cases. . . . The wise operator will do the best he can for each patient . . . considering what the patient's life will be worth to him, if he survives, as compared to its worth without operation."

The suggestion is that I picked my cases so as to avoid mortality. Dr. Lloyd G. Lewis has assisted me in studying again the period between Feb. 20, 1919, and Sept. 18, 1922, during which I carried out 198 perineal prostatectomies without a single death, all patients leaving the hospital. Eighteen were between 75 and 85 years of age; ninety-eight had cardiac disease. We found that during this period there were nine of my patients who were not subjected to prostatectomy. Eight of the patients received no operative treatment. Three left to be operated on at home. The fourth, aged 82 years, senile, had a bad heart and kidneys and was sent home to die in a few days. The fifth had dementia and had only slight prostatic obstruction; he was consigned to the psychiatric department. The sixth was one whose symptoms were so slight that no operation was advised. The seventh and eighth died of uremia, and autopsy showed pyonephrosis. Another severely ill patient had suffered false passage of a catheter before admission. Suprapubic cystostomy for drainage was carried out. He died ten days later, and autopsy showed abscesses, retrovesical and renal. This total of 207 cases of benign prostatic hypertrophy represents all of my own patients who were in the hospital during this period. Among the 207 cases there were three deaths (1.4 per cent).

During the same period of two and a half years, 269 cases of prostatic hypertrophy were admitted to the public wards and the private services of the three other members of the visiting staff. Of these, 257 patients were subjected to perineal prostatectomy by eighteen different operators, with twelve deaths (4.7 per cent). Three had suprapubic cystostomy for drainage with no deaths. Ten received no operative treatment, with six deaths. These were cases that failed to respond to

preliminary treatment. Therefore, among the total number of "prostatics" (269 cases) cited there were eighteen who died, a total mortality of 6.6 per cent. It is interesting to note that the number of surgeons was the same as the eighteen referred to by Dr. Keyes, "who operated under his eye" on 110 patients by suprapubic prostatectomy with forty deaths, and that the total mortality for the 175 "prostatics" was 49 per cent.

If public ward patients operated on by the visiting staff are excluded, during this period ninety-two public ward patients were operated on by fifteen residents, assistant residents or interns, with four deaths, a mortality of 4.1 per cent. In addition, they performed two suprapubic prostatectomies with no deaths. There were six public ward patients too ill for operation, and four of these died. If these are added to the record of the residents, the total of these public ward "prostatics" admitted during this 2½ year period is, therefore, 100, and the total number of deaths eight, or 8 per cent, as compared with the 49 per cent reported by Dr. Keyes.

It is only fair to state that I have had "unlucky" periods with a varying mortality. In a twenty year period that was carefully studied (Young, H. H.: *Surg., Gynec. & Obst.* **36**: 589 [May] 1923) I performed 1,049 perineal prostatectomies with a mortality of 3.4 per cent. Fifty per cent of these patients had some form of cardiovascular disease, and 144 were between 75 and 95 years of age.

Dr. Keyes remarks: "The beautiful dissection of which Dr. Young is master . . . in other than the most skilful hands, the perineal operation is too uncertain." Thanks, but why too uncertain for any but the "most skilful hands?" Our fifteen residents and interns, doing their first work on the prostate, had a mortality of 4.1 per cent, as already referred to.

Again: "They [the surgical profession] must cling to that operation which alone provides fool-proof drainage, and in which no slightest slip entails the dangers of rectal perforation, urinary dribbling. . . ." In 1,264 operations by nineteen operators there have been nine rectal injuries (0.7 per cent), hardly enough to be a bugaboo. Surely the up-hill suprapubic drainage is no more fool proof than the down-hill perineal route, which drains the prostatic cavity directly to the outside. In fact, it is one of the great reasons why perineal prostatectomy is safer than the suprapubic. If suprapubic drainage is fool proof, how about its 33 per cent mortality in the ninety-eight cases he reports? As to dribbling: In 450 cases of perineal prostatectomy, I found only three cases of incontinence (Young, H. H.: The Ultimate Results of Prostatectomy, Memoirs and Bulletins of the International Congress, London, 1911).

Again, "Alas, it seems as though perineal prostatectomy, the most beautiful of all the prostatectomies, is doomed!" The perineum "threatens to become a lost region" to surgery. "Prostatic retention must be treated by many surgeons, who have not had the good fortune to learn . . . the perineal operation. . . . Such men must operate above the bone."

If perineal prostatectomy is doomed, along with it will go other perineal operations, such as those for cancer of the prostate, stones in the prostate, ruptures of the prostatic urethra, cysts of the prostate, abscesses and tuberculosis of the prostate and seminal vesicles, and many other rarer conditions, which can be accurately attacked only through the perineum. Is the radical operation for carcinoma of the prostate, by which over 50 per cent of the cases have been cured, to be given up? Are surgeons to leave unaided those extensive cases of genital tuberculosis, with involvement of the seminal vesicles and prostate, a considerable percentage of which have been cured, even though it was necessary to remove also the kidney in one third of the cases? Are those young men, carrying hundreds of stones in the prostate, and with grave symptoms, both local and sexual, to be left in their misery, simply because the surgeon unblushingly states that the perineum is for him a terra incognita, and that he is unable to master the anatomy and physiology of this region, which many a hospital intern has learned without much difficulty? Should the surgical profession, because of ignorance or ineptitude, give up perineal prostatectomy, "the most beautiful of all prostatectomies" according to Dr. Keyes, regardless of the fact that it has been conclusively shown, not only by studies of the records of eighteen operators in my service, but also by the reports of Cecil, Hinman, Davis, Deming, Phifer, Wildbolz and others that the mortality is much less than that reported by Dr. Keyes? Should not every urologist pretending to competence in all urologic surgery be the master of the perineum, through which alone so many diseases can be attacked?

Why this constant reiteration of the difficulties of the perineal route? The technic is not only "beautiful" but indeed simple. The principal requisites are that the patient be in a proper position, with the pelvis flexed, the perineum elevated, so that the operator may see every step of the operation; that the central tendon be isolated by blunt dissection on each side, and that it be divided well away from the rectum, which should be constantly visible; that the recto-urethralis muscle be isolated, picked up with forceps and divided close to the membranous urethra, well away from the rectum, under visual guidance. The operator should then divide the posterior layer of Denonvilliers' fascia close to the apex of the prostate and then push it backward, carrying with it the rectum, which is thus efficiently protected by this strong fascia. If this technic is followed, there is practically no danger of injuring the rectum. The external sphincter can thus be avoided, eliminating incontinence. For these reasons I dubbed my operation "conservative," and because the ejaculatory ducts were avoided. Dissection between the two layers of Denonvilliers' fascia separates not only the prostate but also the seminal vesicles and ampullae of the vasa deferentia from the rectum, thus making not only conservative perineal prostatectomy but also the radical operation for cancer, and total extirpation of the vesicles, vasa deferentia and lateral lobes of the prostate for tuberculosis easy to perform without any danger of injuring the rectum. It is only necessary for the surgeon to have anatomic knowledge and good eyes to recognize the surgical landmarks, muscles and fascia, and that he have sufficient pride to avoid inexcusable mistakes. It is wise for all surgeons, before attempting operations through the perineum, to practice on the cadaver. This should give the knowledge and skill required for accurate operative technic.

At noted in the statistics, suprapubic drainage is rarely employed. A retained catheter is usually sufficient. Urethrotomy through the bulbous urethra is a safer substitute for suprapubic drainage, which, Dr. Keyes has shown, is accompanied by so high a mortality. With proper care the urethral catheter is usually entirely satisfactory.

The principal factors in the safe treatment of "prostatics" are:

great care in preoperative treatment and instrumental study in each case; gradual decompression, by which immediate emptying of overdistended bladders, so often accompanied by collapse, uremia and early death is avoided; forced internal hydrotherapy and appropriate cardiovascular therapy to stimulate renal function; accurate knowledge of the conditions present by phenolsulphonphthalein tests, blood chemistry, cystoscopy, and other means; continuation of the preoperative treatment until renal and cardiovascular studies indicate that the optimum of improvement has been reached, and operation may be carried out as safely as possible; the use of intravenous therapy—salt solution or dextrose to stimulate renal function, and 1 per cent mercurochrome in 12 to 15 cc. doses into the veins, to combat septicemia; the early removal of all packs and tubes from the wound, which is frequently lavaged with mild antiseptics, such as boric acid and mercurochrome; the avoidance of urethral instrumentation (if possible) during convalescence.

It is by the gradual development of these safeguards that the low mortality of perineal prostatectomy, even in serious cases, has been attained. Such results with perineal prostatectomy are not solely attainable by one institution and its graduates but can be accomplished by all who take the proper interest, time and trouble to learn the anatomy and the operative technic of the perineal route, and the laboratory and clinical studies that insure success. These comments apply also to those who have deserted suprapubic prostatectomy to take up transurethral resection, even in large hypertrophies, manifestly an incomplete operation in such cases.

HUGH H. YOUNG, M.D., Baltimore.

SURGICAL TRADE CODE FORBIDS REBATES

To the Editor:—As secretary of the American Surgical Trade Association, which sponsored the Code of Fair Competition for the Surgical Distributors Trade, approved on Aug. 24, 1934, I wish to call the attention of the members of the medical profession to certain provisions of this code, which are of special interest to members of the medical profession.

This code contains the trade practice provisions prohibiting what is generally called commercial bribery which are found in almost all codes of fair competition. These provisions are contained in section 1 of article VIII of the Code of Fair Competition for the Surgical Distributors Trade and read as follows:

> Section 1. No member of the trade shall give, permit to be given, or offer to give, anything of value for the purpose of influencing or rewarding the action of any employee, agent or representative of another in relation to the business of the employer of such employee, the principal of such agent, or the represented party, without the knowledge of such employer, principal or party. Commercial bribery provisions shall not be construed to prohibit free and general distribution of articles commonly used for advertising except so far as such articles are actually used for commercial bribery as hereinabove defined.

At the public hearing at Washington, D. C., before the deputy administrator assigned to this code, the giving of commissions to physicians for referring patients to surgical appliance dealers was discussed at length. It was the consensus of those discussing the practice that the giving of commissions to physicians added to the cost to the patient of such articles: that such patients are generally of limited or no earning capacity and that such practice was probably the most indefensible form of commercial bribery.

While probably the general prohibition of commercial bribery covers the giving of secret commissions to physicians, so as to remove any doubt on this point a specific provision was placed in the section on commercial bribery of the Surgical Distributors Trade Code declaring that physicians offering or recommending to their patients the purchase of products of the trade are the agents of their patients. This provision of the code is as follows:

> For the purposes of this Section, physicians, surgeons, and other professional men and women shall be considered agents or representatives of their patients and/or clients when they offer or recommend the purchase of products of this trade.

The Code of Fair Competition of the Surgical Distributors Trade, therefore, makes a practice which was previously highly unethical now unlawful and punishable by a fine of $500 for each violation under the provisions of the National Industrial Recovery Act.

I ask your aid in bringing this provision to the attention of the medical profession as widely as possible so that there will be no violation of this provision of the Code of Fair Competition of the Surgical Distributors Trade through lack of knowledge on the part of members of the medical profession.

FRED B. HOVEY, Chicago.
Secretary, American Surgical Trade Association.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SNAKE-BITE

To the Editor:—Are poisonous snakes known to live in New Jersey near the Delaware Water Gap and in New York in the Catskill Mountains? Is antivenom serum effective? What firm produces the most reliable serum? What animals are used to produce antivenom serum? This is important for anaphylaxis; I have in view a family sensitive to horse serum. Please omit name. M.D., New York.

ANSWER.—In both places, the timber rattlesnake and the copperhead are found. In case of snake-bite, local treatment should first be given. A tourniquet is applied, not too tightly, above the site of the bite and should be moved upward as the swelling spreads. Short cross-shaped incisions are made at the site of the fang marks and others an inch apart around the edge of the swelling. As the swelling spreads, further incisions are made. Suction is applied to these incisions, either by a suitable mechanical apparatus or by the mouth, if this is free from sores. Venom is not absorbed from an intact mucous membrane and is destroyed in the stomach if swallowed. The suction is continued for fifteen minutes and repeated at hourly intervals for several hours. The wound must be carefully covered between times with a clear cloth or gauze soaked in 2 per cent salt or epsom salt or an antiseptic that does not coagulate albumin. A physician or hospital should be reached as soon as possible. Violent exercise, even fast walking, and alcoholic stimulants are to be avoided, as they increase the rate of absorption of the poison.

Antivenin is injected as soon as the local treatment is initiated. Not less than the full contents of one syringe should be given at once and, in case the snake is large or the victim is a child, two or more should be given immediately. About half of the dose is injected subcutaneously in a ring about the local swelling, to antagonize the local effects of the venom; the remainder in a muscle high up on the bitten limb or subcutaneously over the abdomen or between the shoulder blades. If constitutional symptoms are not relieved within an hour, further injections of antivenin should be given as indicated.

Antivenin against the bites of North American snakes is made by the Mulford Biological Laboratories, Sharp and Dohme (Glenolden) Philadelphia, supplied as Antivenin (Nearctic Crotalidae) or North American Anti-Snakebite Serum. It is prepared only from horse serum. It is a polyvalent antivenin, prepared against the venoms of all the poisonous snakes of North America, except the unimportant coral snake. It is effective if given in adequate dosage. From one to four syringes will be sufficient in most cases for such poisonous snakes as occur in the northern part of this country.

INJECTION OF VARICOSE VEIN

To the Editor:—About three months ago, I had injected 3 or 4 minims (0.2 cc.) of 5 per cent sodium morrhuate into a leg vein, when the vein suddenly disintegrated, allowing the solution to become free in the tissues. The patient had so much pain that she refused to allow any protective measures. Since then an excruciatingly painful ulcer has formed, which refuses to heal. The patient says it is more painful and troublesome than the four year old varicose ulcer which I did succeed in closing. Please advise on the treatment of this obstinate ulcer. Also give pointers on the prevention of such an accident and the steps to be taken at the time of such a rupture. What can I do for the extreme pain locally? Please omit name and address. M.D., New York.

ANSWER.—From the description it is not quite clear whether the injection of sodium morrhuate was deposited outside the vein or whether an actual necrosis of the wall of the vein took place at the site or at some distance from the injection. The latter mishap does not occur suddenly but several hours or days after the injection. When the patient complains of a sudden pain during or right after the injection, the solution in all probability is deposited in or outside the vessel wall. In such an event it is wise to stop further injections immediately and inject 5 cc. of blood taken from an adjoining vein into the area of skin, which blanches and balloons out. A protective dressing is applied and an electric pad is used to hasten absorption of the hard mass. Should the skin break down, an immediate excision not only of the ulcer but of the entire indurated mass results in a primary union. When excision is delayed until secondary infection takes place, this must first be cleared up by hot boric acid dressings and immobilization. One per cent nupercaine ointment may alleviate the pain. The success of complete excision and primary closure requires surgical experience and may necessitate skin grafts.

ARTHRITIS WITH DIABETES

To the Editor:—I have a diabetic patient, a man, aged 62, who has an acromial bursitis (left) and a neuritis involving the left upper extremity. The neuritic symptoms began about four months ago and disappeared under treatment with sodium salicylate and control of the diabetic condition. About one and one-half months ago the patient fell on his left shoulder. Since that time he has complained of severe pains in the left shoulder, forearm and wrist and at the insertion of the deltoid, and sensations of pins and needles in the finger tips. The pains travel from one place to another. There is marked limitation of motion of the shoulder because of pain. The patient describes the pain in the arm and forearm as a continuous gnawing and drawing sensation. When heat from a therapeutic lamp is used the pain almost ceases, but it returns as soon as the heat is removed. The pain is so severe and annoying that only about one to two hours of sleep is gotten at night and that is due to the use of strong narcotics, as pantopon and morphine sulphate. Iron cacodylate intravenously (five doses) and diathermy treatments over a period of three weeks gave no results. On one occasion partial relief from the gnawing pain was obtained by the use of sodium salicylate, 10 grains (0.65 Gm.), acetylsalicylic acid, 5 grains (0.3 Gm.), amidopyrine, 3 grains (0.2 Gm.), and codeine, one-eighth grain (0.008 Gm.), every two hours as required. The relief lasted during the period of medication, but when the symptoms of overdosage (ringing in the ears) developed, medication was stopped and the pain returned. Roentgen examination reveals a small amount of calcification of the bursa. Do you think that nonspecific protein injections such as intravenous administration of typhoid vaccine would be of help, considering the age of the patient? What treatment would you advise and what is the prognosis? At this time the diabetic condition is uncontrolled. There is a small amount of atrophy of the muscles in the arm which I think is due to nonuse. Sensations are normal; the neurologic examinations are negative. As I have stated, the salicylates relieved the neuritic pain for one day, but the pain in the shoulder due to the bursitis was not affected. It seems that the neuritic pains are the ones that prevent sleep. The electrocardiogram gave no evidence of coronary disease; there was a left ventricular preponderance. The roentgen examination of the spine was negative. Please omit name.

M.D., New York.

ANSWER.—The appearance of arthritis in patients with disturbed sugar metabolism is interesting and the relation of the two conditions is unknown. The diabetes must be kept under control. Osteo-arthritis involving the cervical spine, especially the fifth and sixth vertebrae, is not always demonstrable by roentgen examination, especially in the early stages. There may be an exudate in the vertebral foramina caused by pressure on the spinal nerve roots.

The treatment includes a combination of factors that may be effective. Vaccines are worth trying and should be given in small doses at intervals of from four to five days, until the pain is under control. All drugs except codeine by mouth or salicylates in large doses by rectum should be stopped.

In the treatment of this case the application of head and arm traction should be considered. If this is unsuccessful, gentle manipulation under ether anesthesia following gas induction should be done. Physical therapy, including radiant heat, gentle massage and diathermy should follow. If diathermy exaggerates the symptoms, it should be discontinued.

STERILITY

To the Editor:—A woman, aged 36, in good physical condition, married five years, conceived first in 1930 and aborted ten weeks later. She aborted again the following year and since then has failed to conceive altogether. The Rubin test was done on two occasions and was found negative. The husband is highly emotional but otherwise in good health. Semen examination under a slide shows active spermatozoa for over two hours. It may be important to add that the woman received a curettage after the first abortion but not after the second. What would be the rational procedure in such a case? Would it be worth while to try artificial impregnation? What knowledge can be obtained from a morphologic study of the spermatozoa? How is such a specimen prepared? Kindly omit name.

M.D., New York.

ANSWER.—No information is given concerning the condition of the pelvic organs. Not infrequently in such cases there is a hypoplasia of the uterus. In some of these patients, injections of anterior pituitary hormone and thyroid preparations prove helpful. It is assumed that by a "negative" Rubin test the inquirer implies that the tubes are patent to gas. If the tubes are impermeable, artificial impregnation should not, of course, be considered. A good deal of information can be obtained from a careful study of the spermatozoa. Excellent articles on this subject have been published by G. L. Moench (*Am. J. Obst. & Gynec.* **25**:410 [March] 1933; *J. Lab. & Clin. Med.* **17**:297 [Jan.] 1932). Most likely some spermatozoa are capable of fertilizing an ovum but are incapable of producing a full term child. Unfortunately there is as yet no way of detecting such defective spermatozoa. A curettage is not essential although, as most physicians know, pregnancy not infrequently follows a dilation and curettement. If the spermatozoa appear normal and the tubes are patent, the contents of the cervical canal should be aspirated after coitus to see if there are actively motile sperm in and beyond the cervix. Not infrequently, normal spermatozoa fail to traverse the cervical canal. In such cases, if the cervical secretion cannot be altered by treatment, artificial insemination should be tried. This should be carried out under aseptic precautions a few times during each midinterval between menstrual periods. The patient and her husband should be informed that many inseminations will most likely have to be made.

ACNE OF EXPOSURE TO CHLORINE

To the Editor:—A white man, aged 25, single, in perfect health until eight months ago, has worked for several years in a chemical plant in which a dye for rayon is manufactured; this is called Acoclor-1169. The present illness began eight months ago, at which time acne developed on the back of the neck, along both arms and over the entire back. This condition has become progressively worse, so that the entire area is covered with red nodules just beneath the surface of the skin. Apparently these areas are small cysts, as they contain cystic material, which then become infected, with the formation of pus. Culture shows a mixed group of organisms; biopsy confirms it. In the preparation of Acoclor-1169 the following chemicals are used: hydrogen, benzene, chlorine gas, hydrochloric acid and gas. It is called a di-phenyl process. To date, the following treatments have been used with little success: x-rays; autogenous vaccine; incision of the small abscesses followed by swabbing with phenol (carbolic acid); painting with gentian violet, acriflavine hydrochloride and mercurochrome, and covering with irradiated petrolatum. Could you possibly suggest something else or some reference that might be of help; also some explanation as to the cause of this condition? Kindly omit name and address.

M.D., Georgia.

ANSWER.—The description furnished is regarded as that of "chlor-acne." The inclusion of chlorine gas in the listing of chemicals utilized in the manufacturing process furnishes the probable causative agent. So long as exposure is perpetuated, the condition probably will persist. The well established case, even after further exposure is terminated, is subject to the well known vicissitudes attending acne treatment. Since exposure has been terminated, as good results are to be expected from the general line of treatment specified in the query as from any other form of treatment. Possibly something may be gained by the use of a diet low in carbohydrates. Apart from the already established case, control is linked up with prevention. In the workroom wherein this condition probably was incurred, such devices and measures should be instituted as will eliminate exposure to such substances as benzene, chlorine gas and hydrochloric acid. Additional comment may be found in Prosser White's "The Dermatogoses."

USE OF SODIUM HYPOCHLORITE FOR WOUND IRRIGATION

To the Editor:—Will you please give me the correct technic for using sodium hypochlorite solution in the irrigation of infected wounds. Please do not print my name.

M.D., North Carolina.

ANSWER.—Physiologic solution of sodium hypochlorite should be made according to the method described in the U. S. Pharmacopeia under Liquor Sodii Chloridi Physiologicus. A solution somewhat similar to the U. S. P. preparation may be made by diluting the proprietary preparation Hyclorite, which has been accepted for inclusion in New and Nonofficial Remedies.

A preliminary cleansing of the skin and wound is necessary. Excision of all lacerated or devitalized tissue should be done. All pockets of the wound should be explored and Carrel rubber tubes introduced for instillation of the solution. Ordinarily counter drains are not required.

The drainage tubes are of fine pure rubber approximately 15 to 25 cm. long having a diameter of 5 mm. and a lumen of 3 mm. The ends are tied off with linen or silk, and beginning at the distal end from six to twelve small holes approximately 0.5 mm. in diameter are pierced at intervals of 0.5 cm. These may be made with a special punch, the two sides being pierced at the same time and the direction being staggered.

The number of tubes used must be decided by the size and depth of the wound. All parts of the wound should be bathed by the solution coming out of the tubes. To prevent the tubes from bunching in the wound, strips of gauze are placed between them, which helps also to retain the solution.

For superficial wounds the Carrel tubes are covered with Turkish toweling, and strips of gauze are placed between the tubes. A large pad of nonabsorbent cotton may be placed around the extremity. Simple wet compresses are sometimes used and changed frequently in superficial wounds.

The skin should be protected by covering with strips of gauze impregnated with petrolatum.

Intermittent irrigation every two hours day and night with just enough solution to fill the wound has been most satisfactory. This is not always possible, and good results may be

obtained by less frequent irrigation, although it is not so efficient in sterilization.

The wounds should be redressed daily, the skin being cleansed and the tubes renewed. In certain conditions the change of dressings may be delayed for two or three days, provided the irrigations are kept up.

Bacteriologic films are made of the wound discharge from day to day and, when sterile, deep wounds may be sutured.

CHRONIC PROSTATITIS

To the Editor:—Four months ago a patient, aged 55, experienced discomfort in the perineal region, especially when sitting. This discomfort he compares to a sensation of two raw surfaces in contact with an anterior rectal wall. At times there is a sensation of distention in the scrotum. Eighteen months ago he was treated for a small ulceration on the verumontanum. Examination of the prostate reveals a normal sized left lobe and median bar, but the right lobe is slightly enlarged. The entire gland was somewhat hard but rather smooth, and a tenderness was elicited by massage. The prostatic secretion, after massage, showed a moderate number of pus cells. There has been no difficulty in urination and no retention. Examination of the scrotum shows a small variocele. Examination reveals no hemorrhoids or rectal pathologic changes. A urologist made a cystoscopic examination and found no pathologic change other than some enlargement of the median bar. I began treatment by passing a number 26 sound every ten days, massaging the prostate twice weekly and applying infra-red rays to the perineum. A small amount of improvement was noted at intervals during the first two months. The treatment was continued until three weeks ago, when I began giving the patient intramuscular injections of Proteolac (Searle). A dosage of 5 cc. was used for the first three injections at intervals of four days; then 10 cc. doses were given at the same intervals. Today he received his seventh injection. I have massaged his prostate on the days when he has received injections. No relief has been noted, except on one occasion five days ago, following a sounding, massage and an injection of proteolac. A smear of the prostatic secretion one week ago showed numerous pus cells. The treatment has not cleared the secretion of pus cells or given the patient permanent relief. Potassium iodide and bromides have been prescribed with no benefit. Please advise me as to the possible cause and the treatment of the patient's discomfort. I have made a diagnosis of chronic prostatitis.

M.D., Kansas.

ANSWER.—The diagnosis of chronic prostatitis seems correct in view of the symptoms given and the physical changes found. The fact that there is some hypertrophy of the median bar would indicate prolonged inflammation. Patients with chronic prostatitis that remains so resistant to the usual forms of treatment will frequently, with a more careful study of the posterior urethra, be found to have deep seated small prostatic abscesses. These drain through what appear to be dilated prostatic ducts and can at times be seen to exude thick, purulent material. The openings of these ducts are usually located just lateral to the verumontanum, toward the bladder sphincter.

Treatment should consist of dilation of the openings of these ducts with a blunt instrument such as a stiff electrode to secure freer drainage of the small pockets of pus. If these pockets are deeply situated, it may be necessary to enlarge the openings by incision with the Collings electrode. The incision should be carried through the sphincter and median bar in much the same way that an incision is made through the rectal sphincter in treating fistula in ano. If the median bar enlargement interferes with proper drainage, the walls of the incision should be cut away so that when the patient voids, the urine washes out the contents of these abscess pockets. The fact that the verumontanum remains enlarged and inflamed is another indication that chronic infection of the described type is probably present.

Intravenous and oral medication is usually of little avail in this type of case, in which the chronic inflammation persists because of the factor of faulty drainage.

BILATERAL ITCHING OF EARS

To the Editor:—A patient, aged 40, a married woman, in good health, has been troubled for one year with intensive bilateral itching of the external auditory meatus and auricle. In the beginning, an acute eczematous condition was present, but now there is only a slight red induration. The usual ointments for eczema, stimulating and soothing, with and without phenol, have been tried, with very little effect. The itching is present every day and is so intense that the patient seems completely unable to resist scratching it. There is no history of frostbite or anything that would appear to be an etiologic factor. Can you suggest additional treatment?

MALCOLM B. WILCOX, M.D., Holdrege, Neb.

ANSWER.—The problem in the case cited is to reduce itching to the point at which the patient can resist the temptation to scratch, then to increase her self control and break the habit of scratching. Two methods suggest themselves. The patient may be given a general sedative such as bromides, which will make her less nervous and make it easier to resist scratching. The danger of skin eruptions from bromides, which restrains many physicians from their use in similar cases, is much less than from the newer sedatives which have so largely supplanted the bromides, and is slight for short courses of medication. The intake of chlorides should be reduced as much as possible to facilitate the absorption of the bromides. After the soothing effect has been obtained, the dose can be reduced to three-fourths the amount and maintained for a week or two. A simple soothing ointment, as zinc oxide ointment or zinc oxide paste, should be applied once or twice a day. Only oil should be used for cleansing. Careful abstention from scratching should be insisted on.

Roentgen rays may be used to good advantage to the extent of two full erythema doses. This dosage should not be exceeded. One-fourth erythema dose, unfiltered or through a light aluminum filter, should be given once a week until the itching ceases. This often gives permanent relief. Cessation of scratching is as important as it is with the other plan of treatment.

ADDICTION TO BARBITAL

To the Editor:—I am interested to know whether you have any further data on amytal compound, sodium amytal and pentobarbital sodium as to their being habit forming or causing any undesirable after-symptoms. My reason for inquiring is based on a case, the history of which is as follows: A man about 50 years of age had been addicted to the use of morphine off and on for many years. He gave insomnia as the original cause for the addiction. He seemed to be in fairly good condition when he came to me one year ago after having been taken off the morphine habit one month before. He was suffering at this time with extreme insomnia, spasms and drawing of the muscles, and he was nervous and despondent. I started him on treatment with amytal in large doses, three capsules of sodium amytal, three capsules of amytal compound and three capsules of pentobarbital sodium (Abbott) given in two doses at 7 and 10 p. m. This seemed to give him instant relief with good nights of six to eight hours' sleep and very little after-effects in the morning. This was continued for six months, at which time he started to lose steadily in weight from 185 to 150 pounds (84 to 68 Kg.). Also suffering from chills and headache from early afternoon until time for his first dose of medicine, again he would be free from these disturbing factors as if by magic. These symptoms have been increasing in severity and it is with difficulty that he can be held off until time for the first dose of medicine. Please give me your most sincere judgment as to whether or not this medicine would be habit forming under these circumstances and if it would cause any of the symptoms I have referred to in this letter. I have had blood tests, that is, sugar, nonprotein nitrogen, Wassermann, red and white blood cell counts, roentgenograms of the lungs, a heart and a gastric series and cannot find any cause for the symptoms. This case is a most unusual one and I am anxious to know whether the medicine has played any part in these symptoms. Please omit city and name if printed in THE JOURNAL.

M.D.

ANSWER.—Addiction to barbituric acid derivatives is mentioned in Seifert's Nebenwirkungen der modernen Arzneimittel, although this is not specifically described for amytal or for pentobarbital. Habituation to amidopyrine (a constituent of "amytal compound") has also been observed. The reaction described is probably caused by addiction to any one or all of the three compounds administered. This may be determined by separate administration of each of the three substances, with observation of the degree of relief of symptoms at each trial.

PILONIDAL CYSTS AND SINUSES

To the Editor:—Will you kindly let me know the frequency of occurrence of pilonidal cysts; also whether anyone has reported on the frequency with which they occur in mental defectives and whether or not their occurrence has ever been regarded as one of the stigmas of degeneracy.

C. STANLEY RAYMOND, M.D., Wrentham, Mass.

ANSWER.—It is generally agreed that the pilonidal sinus or cyst is of congenital origin.

The site of the sinus, which usually produces symptoms in early adult life, is frequently marked by a dimple over the sacrococcygeal region seen in infancy. The occurrence of this dimple in infants and children under 4 years of age has been reported at from 20 to 39 per cent and in adults at from 4 to 30 per cent. Sinuses or fistulas have been found in 3.6 per cent of infants in 300 consecutive births. The occurrence of the sinus in the hospital records may be seen from the Massachusetts General Hospital, where 119 patients were admitted during eight years. Eighty per cent of these were males, in which it occurs more frequently. Some believe that there is a distinctive individual type in which this condition is most frequently found, characterized by obesity, hairiness and glandular dysfunction. There may be a familial tendency. The most support is given to the theory that this sinus is the result of a malfusion of the inferior end of the neural canal with its attachment to the skin. Others believe it is a faulty coalescence of the midline, a sequestration dermoid, or a traction dermoid fistula by a pull of the underlying tissue on the median

raphe. Recent support to it arising as a remnant of the preen gland in many birds is of interest. No figures have been found as to its occurrence in mental defectives or in persons with other physical anomalies.

EMBOLUS AND THROMBUS

To the Editor:—Please be kind enough to differentiate between an embolus and a thrombus. The patient is presumed to have a mural thrombus following a coronary occlusion, which on breaking loose plugs the popliteal artery at the junction of the anterior tibia. Is the resulting obstruction an embolus, an embolic infarct or a thrombus? After amputation of the leg above the knee, the vessel in the amputated part is opened and traced. In the popliteal artery at the junction of the anterior tibia is an old organized drab colored fibrous obstruction giving evidence of having existed for several days. It is adherent to the vessel wall. Higher up in the popliteal artery at approximately opposite the knee joint is evacuated a black clot, soft, which is emptied out of the vessel easily, retaining its form and having on it projections that lead into small branches. The clot at the anterior tibia is presumed to have occurred first, and the second one the result of obstructed circulation below. What do you call them in their relation to the mural thrombus?

H. R. SUGG, M.D., Clinton, Iowa.

ANSWER.—An embolus is an insoluble foreign body free in the blood stream, which it may obstruct when impacted in its channel. A thrombus is a blood clot, in the heart or blood vessels, which remains at the site of its formation. Basing the answer on the correspondent's presumption, the resulting obstruction is an embolus. The mural thrombus, which is assumed to have occurred in the left cardiac ventricle following the coronary occlusion, was detached as a whole or in part, becoming an embolus. The embolus lodged in the popliteal artery at its junction with the anterior tibial and was found as the "drab-colored obstruction." The soft black clot is a propagated thrombus formed in the stagnant blood proximal to the embolic obstruction in the popliteal artery.

ORDER OF PROPHYLACTIC VACCINATIONS AGAINST INFECTIONS

To the Editor:—In THE JOURNAL, April 21, page 1326, in answer to a question concerning the timing of immunization against infectious diseases, you recommend immunization against whooping cough. May I ask whose product you recommend, if it is on the market? Will you also please state the dosages and time intervals? Further on in the answer you state that the Schick test should preferably be performed in the spring or autumn. Will you please state the reasons? Kindly omit name.

M.D., Ky.

ANSWER.—Among others, the pertussis vaccine (Sauer) prepared by Eli Lilly & Co. may be regarded as reliable. The dosage, which is given on the package, is 1 cc. subcutaneously in the upper deltoid region of each arm, followed in one week by 1.5 cc. subcutaneously in the biceps region of each arm and one week later by 1.5 cc. in the triceps region of each arm.

It should be noted that in the answer referred to it is stated that the Schick test should be made four months or more after a single injection of alum toxoid against diphtheria. This test is made in order to determine whether the child gives a negative test, that is, whether it is protected against diphtheria, and that in any case smallpox vaccination may now be done. It may be of advantage to vaccinate against smallpox in the spring so that the child may be protected during its wanderings in the summer; and the autumn is a good time for vaccination against smallpox in order to protect the child, as it may enter school then.

THERAPEUTICS OF THEOBROMINE

To the Editor:—1. Are the diuretic effects of theobromine alkaloid more pronounced when given intravenously than when given by mouth? Give low and high limits of dosage for intravenous use. What are the symptoms of overdosage? 2. What is the relative efficiency of theobromine alkaloid and some of its combinations, such as theobromine sodiosalicylate and theobromine calcium salicylate, when the drugs are used intravenously? 3. What is the water solubility of theobromine alkaloid? What is the most soluble salt of this drug? 4. What are the signs of abnormal reactions encountered with full dosage of theobromine and its preparation? 5. Are theobromine or its preparation incompatible for intravenous use in combination with methenamine, sodium iodide, sodium salicylate, or with any of these used with it singly? 6. What is the relative efficiency in the liberation of formaldehyde in the urine of 1 Gm. of methenamine given by mouth and the same dose given intravenously?

G. D. M. LAMBDIN, M.D., Electra, Texas.

ANSWER.—1. Because of its slight solubility, theobromine alkaloid is not used as such; and it certainly could not be given intravenously. For theobromine sodiosalicylate the dosage on intravenous administration ranges from 0.3 to 1 Gm. given in 10 per cent solution. Symptoms of overdosage are headache, dizziness, restlessness, nausea, vomiting and epileptiform convulsions.

2. Theobromine alkaloid could not be used intravenously, because of its insolubility. Theobromine sodiosalicylate and theobromine calcium salicylate are probably equivalent on intravenous administration.

3. The solubility of theobromine is very slight, while that of theobromine sodiosalicylate is as great as 1:1 when freshly prepared. It absorbs carbon dioxide from moist air, which liberates theobromine and hence makes it less soluble. A small amount of sodium salicylate will clear a strong solution.

4. Anorexia, nausea, vomiting, diarrhea, headache, dizziness, somnolence, palpitation, dyspnea, collapse. It may cause generalized erythema.

5. There is no incompatibility in these agents singly or combined.

6. There is no difference in the efficiency of methenamine on oral or intravenous administration, as the degree of liberation of formaldehyde depends on the degree of acidity of the urine. The intravenous use is not to be recommended.

NUMBNESS OF ARMS

To the Editor:—I have a woman patient, aged 42, who is apparently normal in every way and robust in build, who is greatly troubled by numbness in both arms coming on during sleep. On awakening, massage and exercise for several minutes are required to restore sensation. This began six years ago, at first occasionally after hard work, now for a year every night. She is less affected if she lies on her back, but if she lies on either side the upper arm is also affected. Recently carrying a basket on either arm at a right angle has brought on the numbness, which is relieved by allowing both arms to hang down by the side. The arms ache after the numbness has passed off. There is no swelling, except of the fingers slightly at times. There is no redness, blueness nor paleness during the attacks. The patient does not have numbness in the lower limbs. Formerly only the hands and forearms were affected but recently it has been extending up to the shoulders. The patient has a sore spot with tenderness over the external condyle of the humerus on the left arm. She has a good grip in both hands. She is awakened every two or three hours by the numbness. If she lies continuously on her back she can sometimes pass the night without an attack. What is the probable diagnosis as to the cause and is there any treatment? Please omit name.

M.D., Missouri.

ANSWER.—The occurrence of the numbness in certain postures and under certain conditions suggests the existence of some source of pressure that operates only under these conditions. It is certainly indicated that the presence of cervical ribs as a source of pressure should be eliminated by taking roentgenograms. Failing a positive finding by this means, the only remaining recommendation is that a thorough neurologic examination should be made.

BILATERAL EPIDIDYMITIS

To the Editor:—About three weeks ago I noticed that my left testicle was tender. Later in the day it was slightly enlarged and rather painful. By the third day I was unable to be on my feet, as it caused much pain and swelling. Then the right testicle became very tender, slightly enlarged and somewhat painful. Now, after three weeks, I am able to be on my feet, but both testicles are still tender. The left one remains about three times the normal size, the right one slightly under twice the normal size, and I just do not get my "pep" back. The pulse is twelve beats under normal. Several physicians have attended me. I have had calomel purges, local poultices and medicines. I have been charted up at a hospital and nothing wrong was found except a slight enlargement of the prostate, which, it was decided, might be causing the trouble. I have never had venereal disease, am 65 years old, and my urinary function is normal. If you can help me with diagnosis and treatment, I will be thankful. Please omit name and address.

M.D., Colorado.

ANSWER.—A diagnosis without examination is difficult. The history suggests a bilateral epididymitis secondary to a prostatitis and seminal vesiculitis. There may be a beginning hyperplastic change of the prostate underlying this. Rest and heat will in all probability clear up the acute phase of this condition. Later investigation as to the underlying cause and its correction should be carried out.

SYMPTOMS AFTER NEPHRECTOMY

To the Editor:—I have a patient, a man of 39, who had nephrectomy performed about nine years ago for tuberculosis of the left kidney. Except for painful and frequent micturition, he has no complaints and appears to be in good health. Urinalysis shows a moderate amount of albumin and pus cells. What treatment would you outline for the relief of his symptoms? Would tuberculin injections be of value in this case? Please omit name.

M.D., Ohio.

ANSWER.—The patient may have an involvement of the remaining kidney, and this should be studied. If the symptoms are due entirely to bladder lesions, which are frequently associated with tuberculosis of the kidney and continue for a long time after the removal of the diseased organ, the bladder should be treated locally. Instillations into the bladder of 2

per cent phenol (carbolic acid) solution frequently give relief and in all probability have some influence on the healing of the ulcerations. Tuberculin injections may be of some value, but this remedy should be used by one who is familiar with its administration. In the hands of the inexperienced, it may do more harm than good.

INNERVATION OF DENTAL PULP

To the Editor:—Perhaps you can straighten me out on this question recently asked me by a dentist: Why is it that an infiltration or conduction local anesthesia will permit grinding and extracting in the bicuspids but will not permit touching the pulp, when an intra-osseous injection of the same solution will allow the pulp of the bicuspid to be painlessly removed? Does the pulp have a separate innervation from small nerve filaments passing from the alveolus through the cementum and dentin, or what? If published, please omit name.

M.D., California.

ANSWER.—So far as is known, the only nerve fibers entering the dental pulp pass through the canals in the apex of the tooth root. No one has ever reported the finding of nerve fibers passing through the cementum on the side of the root into the dentin. From the practical standpoint the question was referred to the department of surgery, which answered as follows:

In either infiltration or block local anesthesia not all of the sensory fibers may be controlled. For example, block anesthesia of the third division of the fifth nerve at the mandibular foramen, sufficient anesthesia may be produced for surgical purposes and yet the filaments supplying the pulp of an individual tooth may not be necessarily anesthetized. The fifth nerve is a large nerve and a block anesthetic may be sufficient for gross surgery. Then, too, the time element is important. The pulp of a tooth may be sensitive shortly after the analgesia has spread to the tissues supplied by the particular branch. If sufficient time is allowed, the analgesia will probably deepen to exclude all pain.

INTRA-UTERINE DEATH OF FETUS

To the Editor:—A white woman, aged 34, whose menstrual history is not remarkable, presents the following history of pregnancies and infant and fetal deaths: The blood pressure during pregnancy has varied between 120/80 and 150/90. The urinalysis has always been negative. The first pregnancy resulted in a normal child, who died of diphtheria at the age of 2 years. A second child was born at term. Jaundice developed and it died three days post partum. The third pregnancy resulted in a stillbirth after six or seven months. The fourth terminated with the birth of a normal boy, who is now 7 years old. The fifth resulted in a stillbirth after seven months. During the sixth pregnancy, fetal movements ceased at six and one-half months and the patient was delivered, March 15, 1934, about eight months after conception. I attended the patient only on the occasion of her sixth delivery. The fetus was rather firm; the placenta was small and showed numerous infarcts. One month later the uterus has involuted to normal size and is anterior in position. There are no palpable pelvic masses, no pain or cervical ulcerations. The Wassermann reaction is negative. Can you suggest a cause for the intra-uterine fetal deaths and treatment that might enable the patient to give birth to another living child? Please omit name.

M.D., Alabama.

ANSWER.—Intra-uterine death is frequently due to thyroid dysfunction. This patient should have one or more tests of the basal metabolism to ascertain the condition of the thyroid. If an abnormality of thyroid function is diagnosed it should be treated. More frequently, a hypothyroidism is discovered and an extract of thyroid should be prescribed. The Wassermann and Kahn reactions of the blood of the patient and her husband should be repeated to rule out latent syphilis, which must be treated if it is discovered.

HEBERDEN'S NODE

To the Editor:—A patient with chronic arthritis of the distal phalangeal joints rather suddenly developed a Heberden's node during an acute exacerbation. This remains after several weeks as a slightly movable painless tumor about 5 mm. in diameter. It feels like a tense cyst. What is the best treatment? Can it be excised safely?

WALTER J. ROBBINS, M.D., New Britain, Conn.

ANSWER.—A gouty diathesis should be excluded in this case. Enucleation and examination for biurate crystals would be indicated in the situation described.

SPINAL CORD INJURY AND IMPOTENCE

To the Editor:—Kindly advise me whether it is possible for a man with complete severance of the spinal cord at the fifth dorsal vertebra to have an erection of the penis. I have a patient completely paralyzed from the nipples down following an injury to the back who gets an occasional erection. Kindly omit name.

M.D., Pennsylvania.

ANSWER.—Yes, it is possible for the patient to have erections when the lesion is as high as it is in this case.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral (Group A and Group B candidates).* San Antonio, Texas, Nov. 13-16. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B candidates).* The examination will be held in various cities of the United States and Canada, Nov. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: San Antonio, Texas, Nov. 12; Philadelphia, June 10. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: San Antonio, Texas, Nov. 16. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARKANSAS: *Basic Science.* Little Rock, Nov. 5. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Regular.* Little Rock, Nov. 12. Sec., Dr. A. S. Buchanan, Prescott. *Eclectic.* Little Rock, Nov. 13. Sec., Dr. L. L. Marshall, 820 W. 14th St., Little Rock.

CALIFORNIA: Sacramento, Oct. 15-18. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Basic Science.* New Haven, Oct. 13. *Prerequisite to license examination.* Address, State Board of Healing Arts, 1895 Yale Station, New Haven. *Regular.* Hartford, Nov. 13-14. *Endorsement.* Hartford, Nov. 27. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, Nov. 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

FLORIDA: Tampa, Nov. 12-13. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 9-10. Joint Secretary, State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

ILLINOIS: Chicago, Oct. 16-18. Superintendent of Registration, Department of Registration and Education, Mr. Eugene R. Schwartz, Springfield.

IOWA: Des Moines, Oct. 8-10. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MAINE: Portland, Nov. 13-14. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 13-15. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 144 State House, Boston.

MICHIGAN: Lansing, Oct. 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Oct. 16-18. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MISSOURI: Kansas City, Oct. 24. State Health Commissioner, Dr. E. T. McGaugh, State Capitol Bldg., Jefferson City.

NEBRASKA: Lincoln, Nov. 22-23. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 5. Sec., Dr. Edward E. Hamer, Carson City.

NEW JERSEY: Trenton, Oct. 16-17. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 8-9. Sec., Dr. P. G. Cornish Jr., 221 W. Central Ave., Albuquerque.

OREGON: *Basic Science.* Portland, Nov. 17. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

Georgia June Examination

Mr. R. C. Coleman, joint secretary, State Examining Boards, reports the written examination held by the Georgia State Board of Medical Examiners, June 14-15, 1934. The examination covered 10 subjects and included 100 questions. An average of 80 per cent was required to pass. Eighty candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Emory University School of Medicine		(1933)	89.5, (1934) 82.8, 83.8, 84.4, 84.6, 84.9, 85, 85.1, 85.6, 85.8, 86.3, 86.4, 86.8, 86.9, 87.1, 87.2, 87.7, 87.8, 87.8, 87.8, 87.9, 87.9, 88, 88.1, 88.2, 88.3, 88.5, 88.6, 88.6, 88.6, 88.7, 88.7, 88.9, 88.9, 89.2, 89.3, 89.3, 89.4, 90.7, 91, 97
University of Georgia School of Medicine		(1934)	84.9, 85.3, 85.9, 86, 86.1, 86.2, 86.4, 86.5, 86.6, 86.8, 87.2, 87.5, 87.5, 87.6, 87.8, 87.8, 87.8, 88, 88, 88.1, 88.1, 88.1, 88.4, 88.5, 88.6, 88.7, 88.9, 88.9, 89.1, 89.1, 89.3, 89.3, 89.5, 89.5, 90.6, 91.1, 91.5
University of Nebraska College of Medicine		(1933)	88.6
University of Texas School of Medicine		(1931)	91.6

Eight physicians were licensed by reciprocity from June 18 to July 17. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine		(1931)	Mississippi
University of Louisville School of Medicine		(1928)	Kentucky
Tulane University of Louisiana School of Medicine		(1933)	Alabama
University of Minnesota Medical School		(1930)	Minnesota
Albany Medical College		(1898)	S. Carolina
Jefferson Medical College of Philadelphia		(1928)	Vermont
University of Tennessee College of Medicine		(1920)	Tennessee
Medical College of Virginia		(1930)	Tennessee

Arizona July Report

Dr. J. H. Patterson, secretary, Arizona State Board of Medical Examiners, reports the written examination held in Phoenix, July 5-6, 1934. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Six candidates were examined, 4 of whom passed and 2 failed. Four physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Illinois College of Medicine		(1933)	76.1
University of Kansas School of Medicine		(1933)	80.7
University of Michigan Medical School		(1932)	83.1
Baylor University College of Medicine		(1933)	76.4

School	FAILED	Year Grad.	Per Cent
College of Medical Evangelists		(1933)	74.7
George Washington University School of Medicine		(1933)	72.3

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Illinois College of Medicine		(1929)	California
University of Michigan Medical School		(1927)	Minnesota
Western Reserve University School of Medicine		(1923)	Ohio
Marquette University School of Medicine		(1926)	Wisconsin

Book Notices

Chinese Medicine. By William R. Morse, M.D., LL.D., F.A.C.S., Dean of Medical School, Head of Department of Anatomy and Associate in Surgery, West China Union University, College of Medicine and Dentistry, Chengtu, Szechwan Province, West China. No. 11, Clio Medica: A Series of Primers on the History of Medicine. Edited by E. B. Krumbhaar, M.D. Cloth. Price, $2.50. Pp. 185, with illustrations. New York: Paul B. Hoeber, Inc., 1934.

This volume of the series of primers on the history of medicine under the editorship of E. B. Krumbhaar covers what is probably the longest continuous phase of medical history in human civilization. Chinese medicine in the national cultural sense is still a living and going concern serving [?] as many sick human beings as any other school of medicine even today. This school exists not only in the old civilization of China but also in some other parts of the world where Chinese herb doctors flourish. Devotees of the Chinese cult are not confined to the yellow race or the Flowery Kingdom; thousands of supposedly grateful patients recently followed the bier of a much advertised Chinese doctor in a western city.

The primer of Dr. Morse is from the pen of one familiar with Chinese life, philosophy and civilization, as well as Chinese medicine in both its theory and its practice. He is the head of the department of anatomy and associate in surgery in the Medical College of the West China Union University at Chengtu, Szechwan Province. His primer differs greatly from Wong and Wu Lien-Teh's recently published History of Chinese Medicine in that there is no attempt to show the accomplishments of Chinese medicine, no elaborate history of the classic writers and no discussion of the transition into the modern period. It is rather an exposition of the underlying philosophy of Chinese civilization in its definite relations to the basic principles on which Chinese medical theory and practice rest. The point of view is frankly objective and critical without a trace of prejudice or display of the curious and unusual.

The Chinese culture is based on agriculture. Its medicine rests on a mystic cosmogony, with a strong admixture of alchemy. It is entirely lacking in the quickening influences of the critical, open-minded experimental method. It rests on an elaborate, shrewd and cunning logic, but as far as medicine is concerned either the premises are false or the conclusions are wrong. Medicine in China was at its zenith during the Han dynasty (170 A. D.) but the creative urge was smothered by intricate reasoning veiled in mysticism. It has become a tapestry of empiricism in which magic and religion, superstition and spiritism, credulity and ignorance, deception and quackery form a large part. To the Yang and Yin theory of the dualistic concept of nature there is added the basic idea of the five elements, which combine in a mystical array of relations the influences of which are held to determine the functions of the body and all the hygienic and therapeutic measures for the control of health and the causes and cure of disease. To this there is added a celestial ministry of the ancestral gods, the King of Remedies and the specialists, including Tung Pin, the Aesculapius of Chinese medicine, and Chang Chung Ching, who rates as Hippocrates. Minor gods control the various organs of the body and various diseases from diarrhea to toothache. Worry, poverty and disease are the heritage of China's millions. Fear of the unknown has intermingled their religion, ethics and medicine on the groundwork of their cosmogony.

The author reviews Chinese medicine and pathology but concludes with the statement that some of their conclusions were good guesses but are unsubstantiated by proof. His opinion of Chinese anatomy is not much better. It is controlled by numerical and logical concepts, not by observation. The Chinese "Father of Anatomy," clad in a silken gown, with his three or four inch fingernails, painting illustrations for a treatise of anatomy, does not match well with the tens of years of expert dissection of John Hunter. There is no physiology worthy of the name, and the diagnosis rests on an exaggerated evaluation of the pulse. About 156 volumes have been written by Chinese specialists on the pulse, but few are of more than historical value. Materia medica and therapeutics have their font and origin in Chinese cosmogony. Their contributions include hydrotherapy, psychotherapy, smallpox inoculation, regulation of diet, hot tea, moderation and ephedrine. However, Chinese internal medication is a phantasmagoria, though the "incurable" sometimes recover under their treatment, which proves nothing. The author concludes that there are undoubtedly very valuable medicines in the Chinese armamentarium but that their methods are unscientific, irrational and ineffective.

Needling, or acupuncture, is explained with detailed diagrams. Its purpose is to puncture and penetrate at certain definite points one or more of certain twelve hypothetic, invisible, undissectible channels or chin which, according to theory, contain the vital Yang and Yin. The needling adjusts the balance between these opposed principles and thus restores health. Moxibustion on the spot of puncture is used to supplement the treatment. If infection results it is due to the disease, not to the treatment!

In an attempt to balance the scales perhaps about all one can say is that in early days a thousand or more years ago and before that time, China's healers did make a contribution to medical science, and, for that age and civilization, their practices were above those of many nations. It cannot be gainsaid, for instance, that China discovered some excellent remedies. At the present time their medical procedures are of merely academic interest to the medical and scientific historian and of perhaps more interest to the philosopher and metaphysician. As far as modern scientific medicine is concerned, speaking broadly, their procedures are of no actual value unless along the line of suggestive and psychologic therapeutics.

A Textbook of Orthopedic Surgery for Nurses. By Philip Lewin, M.D., F.A.C.S., Associate Professor of Orthopedic Surgery, Northwestern University Medical School. Second edition. Cloth. Price, $3.25. Pp. 389, with 200 illustrations. Philadelphia & London: W. B. Saunders Company, 1934.

This treatise on orthopedic surgery fulfils the purpose expressed in the preface, "to outline a series of principles which will make the nurse competent to care for the orthopedic patient, to assist the orthopedic surgeon in all branches of his work." The subject of orthopedic nursing has been inadequately dealt with in most of the nursing schools of the past. This has been due in part to the fact that books on orthopedic surgery have for the most part been too advanced to be suitable for the student nurse. Dr. Lewin has written in a simple, straightforward style, and the arrangement of the book, beginning with a brief statement on the general orthopedic considerations, embryology, anatomy and physiology of the bones and joints and their related structures first creates a background for a better understanding of the chapters that deal with the clinical problems. At all times this excellent book keeps the nursing point of view foremost. The author emphasizes the fact, which orthopedic surgeons have come to recognize, that the final result in the treatment of the patient depends as much on good nursing care as it does on the doctor himself. In the average general hospital the orthopedic patient is dreaded by the nurses on the floors, particularly if that patient requires care in plaster casts. This dread is based almost entirely on the fact that the nurses

feel at a loss to know just what to do in making the patient comfortable and in the prevention of bed sores. The book is well illustrated and can be recommended not only for student nurses but also for the graduate nurse who is assigned to the care of orthopedic cases, the visiting nurse, and the medical student.

Annual Review of Biochemistry. Edited by James Murray Luck. Volume III. Cloth. Price, $5. Pp. 558. Stanford University, California: Stanford University Press, 1934.

The third volume of this valuable series is as welcome and excellent as the previous Annual Reviews. The advisory committee has adopted the wise policy of attempting to obtain only true reviews of the most important papers with the most direct bearing on the subject rather than to prepare elaborate and noncritical compendiums. As a result, certain special and important papers may not be included in current issues of the Review, but it is to be expected that such papers may be included in special reviews at a later date. The present volume follows the same general plan as in previous issues with the exception that several timely special reviews have been included and several new contributors have been added or substituted. The four new reviews, that is, the chemistry of the sterols, bile acids and other natural fats and oils by O. Rosenheim and H. King, another on biochemical and nutritional studies in the field of dentistry by Martha Koehne and R. W. Bunting, a third on the biochemistry of malignant tissue by E. Boyland and a fourth on the metabolism of carbohydrates and organic acids in plants by W. Ruhland and J. Wolf, are especially welcome at this time. Among the new contributors are A. Bertho, on biologic oxidations and reductions; W. Pauli, on the chemistry of the amino acids and proteins; K. Kotake, on the metabolism of proteins and amino acids; S. Brody, on nutrition, and H. Lundegardh, on mineral nutrition of plants. It is particularly gratifying to see that the certain special chapters are repeated, although some of them may have been omitted in the second volume. Among these are R. O. Gortner's treatment of water in its biochemical relationships, H. D. Kay's review on phosphorus metabolism, L. Ruzicka's summary on terpenes, saponins and closely related compounds, M. Stephenson's review on the chemistry of bacteria, and J. L. Bollman and F. C. Mann's statement on the liver and bile. No worker in biochemistry, no matter how specialized his field may be, can afford to be without this series of reviews.

X-Ray and Radium Injuries: Prevention and Treatment. By Hector A. Colwell, M.B., Ph.D., M.R.C.P., and Sidney Russ, C.B.E., D.Sc., F.Inst.P. Cloth. Price, $4.75. Pp. 212, with 2 illustrations. New York & London: Oxford University Press, 1934.

In 1915 Dr. Colwell, pathologist and radiologist, and Professor Russ, physicist, wrote a timely monograph entitled "X-Ray, Radium and the Living Cell." They have now written a much needed monograph, essentially a compilation, which gives in a concise manner all obtainable knowledge, both clinical and experimental, relative to injuries of all kinds caused by x-rays, radium and radioactive substances. The little book is divided into fourteen chapters and an appendix in which are discussed general consideration of protection; injuries to the skin, respiratory tract, circulatory system, alimentary tract, generative system, urinary tract, nervous system, eye, ear, bone, cartilage, muscle, connective tissue, suprarenals, thyroid, thymus, mammary gland and subdivisions of all these parts; radiation sickness; changes produced by the prolonged action of gamma radiation; poisoning by radioactive substances; x-ray and radium quackery; recommendations of the British X-Ray and Radium Protective Committee, and methods of dosage. It is thus seen that the work is quite comprehensive. The authors review the literature in addition to giving their own experience and they clearly differentiate at all times between facts, theories, beliefs and impressions. They have collected a large amount of data concerning early and late, mild, severe, serious and fatal injuries to various parts of the body in man and have added all the important knowledge gained by animal experimentation, of which there is considerable. The experimental work on cancer, early and late injuries to the viscera, heredity and toleration are especially interesting and important. Because of authenticity, comprehensiveness and conservatism, there is little to criticize. The clinical and histologic discussions of many injuries are not elaborate, but those who desire dissertations are referred to reliable articles and books that deal with limited subjects in great detail. A reasonable number of well selected photomicrographs and clinical illustrations would be a valuable addition, although they would make the book larger and more expensive; furthermore, they are contained in the works to which the readers are referred. The index, while answering essential requirements, might be more detailed. For instance, "cataract" is not in the index but it is, of course, described in the section dealing with eye injuries. The literary style used permits rapid assimilation by any physician; therefore the book is of value to general physicians, specialists, scientists and research workers.

Four Leaf Clovers. By Frederick E. Keller, M.D. Cloth. Price, $1.75. Pp. 148. Philadelphia: Dorrance & Company, Inc., 1934.

Only a few of the poems by Dr. Keller are of particular medical interest; for the most part they deal with the topics that have concerned poets since the beginning of time. The one entitled "Nurse" will have a special appeal for the medical reader:

Along some quiet corridor she goes,
With quickened step, to pause beside a bed
To take the pulse and touch the fevered head
Of some one in distress; soothe the woes
Of woman in travail; her instinct flows
In sympathetic words; another led
From fear to confidence; a baby fed
Or given tender care as mother knows.
Among the many forms of humankind
A barrier 'tween life and death she stands,
Now sad, now happy as the time demands;
Be this a token of her helpful kind—
She lives to serve the sick, a deed divine,
Far, far beyond this earth her glories shine.

Vitality. By Boris Sokoloff, M.D., ScD. Cloth. Price, $2. Pp. 181. New York: E. P. Dutton & Company, Inc., 1934.

The purpose of this book is to popularize recent advances in knowledge of the problems of vitality. The first part deals with vitality of man and of lower animals and with "the gland of life"—the cortex of the suprarenal, the hormone of which is "the hormone of vitality." The second part describes the source of vitality, more particularly lactic acid (acid-base equilibrium, the fuel of the brain, lactic acid as a general antiseptic, the conservatism of lactic acid). The third part is headed "the crisis of vitality—cancer." Here is a chapter on Napoleon's case and a discussion of the revolt of cells and of vitality and cancer. The book has points of interest. Vital phenomena are discussed and explained in apparently simple and convincing language. There can be no question about the confidence of the author in his explanations and reasoning. In most cases, however, the generalizations are more definitive than warranted by existing knowledge.

Les ultravirus: Pathogènes et saprophytes. Techniques d'étude, caractères physiques et biologiques, maladies à ultravirus—Clinique, anatomo-pathologie, épidémiologie, immunité. Par le Dr. Paul Hauduroy, préparateur à la Faculté de médecine de Paris. Paper. Price, 60 francs. Pp. 462. Paris: Masson & Cie, 1934.

The new edition of M. Hauduroy's book on ultraviruses should be welcomed by all those who are interested in this rapidly expanding field of microbiology or wish to acquaint themselves with it. Although the author makes no attempt at completeness, he has succeeded in bringing together most of the recent and important contributions relating to these organisms. The volume is divided into three main divisions. The first treats critically and instructively various technical procedures, such as the preparation and use of porcelain and diatomaceous earth filters and celloidin membranes. There are discussions of cataphoresis and adsorption phenomena and their usefulness and limitations in the manipulation of viruses. Brief chapters are also devoted to tissue culture and staining methods. The second and major part of the book deals with the specific virus diseases of plants, bacteria, insects, birds and mammals. The discussions of the filtrable forms of bacteria have been, for the most part, omitted from this edition. The material concerning each virus is treated under various subheads, and good bibliographies are appended to most of the chapters. Whereas the former edition contained more than 150 references, the present

one contains more than 1,500. Particular emphasis is laid on the physical and physiologic characteristics of the pathogenic viruses. The last portion of the work deals in a more general way with virus physiology and the epidemiology and immunity of virus diseases. The final chapters contain discussions, admittedly highly speculative but none the less interesting, regarding the nature and probable origin of pathogenic and saprophytic viruses. The book contains an index but no illustrations.

Outlines of Nursing History. By Minnie Goodnow, R.N. Fifth edition. Cloth. Price, $3. Pp. 517, with 162 illustrations. Philadelphia & London: W. B. Saunders Company, 1933.

This outline is now in its fifth edition. It is much used as a teaching textbook by many nurses' training schools. The present edition is fully revised and brought up to date. The book gives the history of nursing throughout the world. It is supplemented by a series of appendixes relative to registration, nursing organizations, nursing periodicals and much additional material of practical importance to the nurse in her work.

Recent Advances in Pathology. By Geoffrey Hadfield, M.D., F.R.C.P., Professor of Pathology in the University of Bristol, and Lawrence P. Garrod, M.A., M.D., B.Ch., Bacteriologist and Lecturer in Bacteriology, St. Bartholomew's Hospital. Second edition. Cloth. Price, $4. Pp. 457, with 69 illustrations. Philadelphia: P. Blakiston's Son & Company, Inc., 1934.

This book appeared first two years ago. It is now revised and expanded to include recent advances in knowledge in various fields of pathology. Silicosis, cancer of the lung, monocytic leukemia, the suprarenal in Addison's disease, the pituitary, and the structural changes in deficiency diseases are cited as examples of topics that have received special attention in this edition. There are seventeen chapters in all. The book contains helpful summaries of the current advances in pathology.

Life in the Making. By Alan Frank Guttmacher, Associate in Obstetrics, Johns Hopkins University. With the assistance of Ellery Rand. Cloth. Price, $2.75. Pp. 297, with 8 illustrations. New York: Viking Press, 1933.

The author of this volume has a special ability in making clear to any fairly intelligent reader the biologic processes associated with reproduction both in man and in animals. The publisher has done well in printing a book that is easily readable and artistic. The book is divided into six parts covering the basic biologic factors, sex rhythms, disturbances of the male and female development, determination of sex, sterility and fertility, and multiple births. The volume is enlivened with numerous quotations from literature, with epigrams and with case reports. It should be read with great interest not only by the public but also by physicians, who are frequently asked questions which this book answers.

Collens System of Diet Writing Including: Diet Calculator, Obesity Chart, 100 Menu Prescription Forms. By William S. Collens, B.S., M.D., Chief Diabetic Clinic, Israel Zion Hospital, Brooklyn, N. Y. Fabrikoid. Price, $5.00. Loose-leaf. New York: Form Publishing Company, [n. d.]

This book includes a diet calculator, an obesity chart and 100 menu prescription forms. The diet calculator and the obesity chart provide considerable amounts of data on circulating wheels, so that it is simple for the physician to make up diets containing given amounts of protein, fat and carbohydrate to meet the necessities of cardiorenal disease, neuroses or epilepsy. The obesity diets are calculated to provide menus for the various meals of the day containing definite amounts of protein, fats and carbohydrates and also to meet minimum caloric requirements. The volume should be most useful to general practitioners who feel the need of preparing special diet lists for individual patients in their office practice.

The Doctor and Citizenship. By Thurman D. Kitchin, M.D., President, Wake Forest College. Cloth. Price, $1.50. Pp. 89. Boston: Christopher Publishing House, 1934.

Here is a reprint of essays by the president of Wake Forest College. Most of these have appeared in *Southern Medicine and Surgery*. The essays deal with such topics as the citizenship of the physician, education, lay control of medicine, cancer, and the qualities of a doctor. They show breadth of culture and a thorough familiarity with the modern medical point of view.

Erblehre und Rassenhygiene im völkischen Staat. Herausgegeben in Gemeinschaft mit namhaften Fachgelehrten von Professor Dr. Ernst Rüdin, Direktor des Kaiser-Wilhelm-Instituts für Genealogie und Demographie der Deutschen Forschungsanstalt für Psychiatrie in München. Paper. Price, 14 marks. Pp. 385, with 64 illustrations. Munich: J. F. Lehmanns Verlag, 1934.

This book contains twenty-two articles by nineteen authors on different phases of genetics, eugenics, and race and sterilization problems. The opening article, by the Bavarian minister of the interior, is highly political. The succeeding chapters on the hereditary basis for race hygiene by a botanist, and race origins by an anthropologist, are good but demonstrate the deplorable tendency of the whole book to adapt scientific facts to promulgated laws. It is unfortunate that so many well trained scientists find it necessary to attempt to reconcile important and valuable facts to an abortive political project.

A Life Against Death. By Kenelm Winslow. Boards. Price, $3. Pp. 292. Seattle, Washington: Lowman & Hanford Company, 1933.

This autobiography records the life of Dr. Winslow from birth and boyhood in Boston and in New England through a period spent in Florida. He then discusses his medical training in the Massachusetts General Hospital and his early days as a student and teacher and as an intern. The book then goes on to describe his early practice on the Cape, removal to the West, a period of special study in the Mayo Clinic, and his adventures in the World War. The volume is distinctly personal and offers some interesting anecdotes of medical life.

American Pocket Medical Dictionary: Containing the Pronunciation and Definition of All the Principal Terms Used in Medicine, Surgery, Dentistry, Veterinary Medicine, Nursing, and Kindred Sciences With Over 60 Extensive Tables. Edited by W. A. Newman Dorland, A.M., M.D. Fifteenth edition. Fabrikoid. Price, $2; indexed, $2.50. Pp. 920. Philadelphia & London: W. B. Saunders Company, 1934.

Now in its fifteenth edition, this is one of the most popular pocket medical dictionaries available. It has been entirely reset from new type and increased in size by nearly 100 pages. Over 5,000 new terms have been added and many definitions revised to meet new uses. Significant of the growth of the medical vocabulary is the fact that this volume has gradually increased in size from a little over 500 pages to over 900 pages.

Human Sex Anatomy. By Robert Latou Dickinson, M.D., F.A.C.S. A Topographical Hand Atlas. Medical Aspects of Human Fertility Series Issued by the National Committee on Maternal Health, Inc. Cloth. Price, $10. Pp. 145, with 175 illustrations. Baltimore: Williams & Wilkins Company, 1933.

In this atlas the author makes available a large number of black and white drawings relative to the development of the sex organs of man and woman and of the application of these organs to purposes of reproduction. The data are not generally available in any other work, so that its development by Dr. Dickinson constitutes a scientific service.

Medicolegal

Malpractice: Failure to Administer Antitetanic Serum.—On August 20 Mrs. Thompson stepped on a stick of wood, which turned up and inflicted a wound on the top of her foot. Home remedies were applied and in a few days the inflammation that developed after the accident seemed to have subsided. Ten days later, however, on August 30, her jaws became stiff, she had a pain in her face and neck and she was unable to swallow. She consulted the defendant-physician and told him of her symptoms and gave him a history of the injury to her foot. After examining the foot, the defendant prescribed no treatment. He negatived the fear expressed by the husband that the patient was suffering from tetanus and attributed her present condition to a cold. He advised her that if she became any worse by morning to go to a hospital. About eleven that night the patient had a convulsion. Early the following morning the defendant was called and in accordance with his instructions the patient was taken to a hospital, where she was attended by another physician. This physician made a diagnosis of tetanus, opened and treated the wound, and gave antitetanic serum. The patient grew steadily worse and died the following

day. The husband, as administrator of his wife's estate, sued the defendant, alleging that the death of his wife was caused by the defendant's negligence. At the close of the plaintiff's evidence, the trial court directed a verdict in the defendant's favor and the plaintiff appealed to the Supreme Court of Iowa.

The sole question for determination, said the Supreme Court, is whether or not the evidence presented facts from which the jury should have been allowed to determine whether or not the death of the patient was caused by the defendant's negligence. In malpractice cases it is not sufficient for the plaintiff to show that the defendant did or neglected to do a particular act and that following this commission or omission unfavorable conditions or happenings occurred. The plaintiff must establish a causal connection between the negligence and the unfavorable condition or happening that followed. To show this causal connection, the plaintiff called four expert witnesses. All of these physicians agreed that the proper treatment for an injury from which tetanus might be expected to result is to open and clean the wound and to administer a prophylactic dose of antitetanic serum. None testified, however, that any treatment that the defendant might have administered on the afternoon of August 30, the day the defendant was first called on the case, would have prevented the patient's death, which occurred two days later. One witness stated that even had the defendant-physician given antitetanic serum when he was first called, the fatal outcome of the case would probably not have been averted. To say that the patient's death was caused by anything done or omitted by the defendant, in the opinion of these witnesses, would be pure conjecture and speculation.

The plaintiff placed considerable stress on the testimony of one of the experts that the death rate in cases of tetanus in which the wound is properly taken care of and antitetanic serum given, is about one in four. The mere suggestion, said the court, that a certain percentage of these cases show a recovery can be of no value to the plaintiff, without further evidence tending to place this case in the number of those in which recovery takes place. This witness further testified, however, that by prophylactic treatment he meant treatment administered immediately after the wound was inflicted, that the resistance of a particular individual and the virulence of the germs would make a difference in the results, that the only hope of a cure depends on early treatment, and that the outcome in any case is speculative and conjectural.

The testimony of the expert witnesses, said the court, failed to show any probability that the death of the patient would not have resulted from tetanus regardless of any negligence or malpractice on the part of the defendant. It unmistakably established the fact that any attempt to attribute the death to any act or omission to act on the part of the defendant, rather than to the disease, would be pure speculation and conjecture. If, concluded the court, the attempt to fix the cause of the death of the patient would be speculation and conjecture on the part of experts themselves, it must be clear beyond all doubt that the question should not be submitted to a jury.

The judgment of the lower court was accordingly affirmed.—*Thompson v. Anderson (Iowa), 252 N. W. 117.*

Workmen's Compensation Acts: Death Following Vaccination an Accidental Injury.—William Tucker was employed by the Spicer Manufacturing Company, Feb. 26, 1930. Eight days later he was ordered by his foreman to report to the first-aid plant hospital located on the premises. He did so and was there vaccinated by the company physician. Fifteen or twenty minutes thereafter he resumed his work. His left arm gradually became so inflamed, swollen and painful that at the end of five days he was unable to continue his employment. He died, March 29, 1930. It was agreed that the death resulted directly from the vaccination. His widow filed claim against the company with the industrial commission and from an order disallowing the claim she appealed to the court of common pleas of Lucas county. There the trial resulted in a verdict for the widow and eventually the case came before the Supreme Court of Ohio.

The question presented for consideration, said the Supreme Court, is whether, under the combination of circumstances in the case, the death of the employee resulted from an accidental physical injury arising out of or in the course of employment. That the employee received a physical injury seems clear, said the court. The process of vaccination necessitated a scarifying and laceration of the skin and flesh. This constituted a physical injury to the tissues of the arm. The company, in contending that the vaccination was not an accident, argued that the employee's death resulted simply because he was one of those individuals whose system could not withstand the introduction of vaccine. The widow, on the other hand, insisted that the death may have been caused either in this wise or by other infection entering the vaccination wound. Irrespective of which thing happened, said the court, it was manifestly unforeseen, unusual and unexpected, and therefore accidental. The court quoted with approval from the case of *Texas Employers' Ins. Ass'n* v. *Mitchell* (Texas), 27 S. W. (2d) 600, as follows:

> The bodily injury sustained by Mrs. Mitchell was not due, as involved in the finding of the jury, to rheumatism or any other independent disease, but was directly attributable to the infection following the vaccination of her left arm, as must be presumed, taking the evidence most favorable to appellee. The every [very] act of vaccination itself cannot be said to have been an "accident" in the ordinary sense of the word, as it was forseen, expected, and intended. Mrs. Mitchell went to the doctor's office for that very specific purpose. But the infection and its immediate entry into the system through the vaccination wound was the intervention of an unlooked for circumstance sufficiently constituting the element of accident. There was no intention to have the wound become infected. The vaccination wound and the infection following the vaccination combined to immediately cause and bring about the bodily injury. Therefore such injury would appear, and sufficiently so, to be an injury of accidental nature effected through accidental means.

The court was of the opinion that the employee's injury arose out of or in the course of his employment. It was agreed that the employee would have been discharged if he had not been vaccinated. In other words, it was impossible for him to continue his employment without complying with the company's order. The peremptory nature of the foreman's instruction, observed the court, was shown by the fact that the moment the employee received his order he left his work and went to the plant hospital. Within fifteen or twenty minutes the process of vaccination was completed and he returned to his work. This absence from work resulted in no deduction from his pay. Under this combination of circumstances, concluded the court, it could not be said that the injury did not arise out of and in the course of the employment. The judgment in favor of the widow was accordingly affirmed.—*Spicer Mfg. Co. v. Tucker (Ohio), 188 N. E. 870.*

Society Proceedings

COMING MEETINGS

Academy of Physical Medicine, New York, Oct. 30-31. Dr. Arthur H. Ring, 163 Hillside Avenue, Arlington, Mass., Secretary.

American College of Surgeons, Boston, Oct. 15-19. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Society of Tropical Medicine, San Antonio, Texas, November 14-16. Dr. Henry E. Meleney, Vanderbilt University School of Medicine, Nashville, Tenn., Secretary.

Associated Anesthetists of the United States and Canada, Boston, Oct. 15-19. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.

Association of Military Surgeons of the United States, Carlisle Barracks, Pa., Oct. 8-10. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.

Central Association of Obstetricians and Gynecologists, New Orleans, Nov. 1-3. Dr. Ralph A. Reis, 104 South Michigan Boulevard, Chicago, Secretary.

Central Society for Clinical Research, Chicago, Nov. 2-3. Dr. Lawrence D. Thompson, 3720 Washington Boulevard, St. Louis, Secretary.

Delaware, Medical Society of, Dover, Oct. 9-10. Dr. William H. Speer, 917 Washington Street, Wilmington, Secretary.

Indiana State Medical Association, Indianapolis, Oct. 9-11. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, Philadelphia, November 5-9. Dr. W. B. Peck, 27 East Stephenson Street, Freeport, Ill., Managing-Director.

Omaha Mid-West Clinical Society, Omaha, Oct. 29-Nov. 2. Dr. Joseph D. McCarthy, 107 South 17th Street, Omaha, Secretary.

Pacific Coast Society of Obstetrics and Gynecology, Oakland and Del Monte, Calif., November 21-23. Dr. Clarence A. De Puy, 230 Grand Avenue, Oakland, Secretary.

Southern Medical Association, San Antonio, Texas, November 13-16. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Virginia, Medical Society of, Alexandria, Oct. 9-11. Miss Agnes V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

9: 697-840 (Aug.) 1934

Acute Pulmonary Congestion and Cardiac Asthma in Patients with Mitral Stenosis. S. McGinn and P. D. White, Boston.—p. 697.
Huge T Waves in Precordial Leads in Cardiac Infarction. F. C. Wood and C. C. Wolferth, Philadelphia.—p. 706.
Q & T Types of Electrocardiograms: Their Comparative and Complementary Value in Indicating Occurrence of Acute Myocardial Infarction. A. R. Barnes, Rochester, Minn.—p. 722.
Correlation of Initial Deflections of Ventricular Complex with Situation of Acute Myocardial Infarction. A. R. Barnes, Rochester, Minn.—p. 728.
*Electrocardiographic Pattern Observed Following Acute Coronary Occlusion Complicated by Pericarditis: Report of Cases. A. R. Barnes, Rochester, Minn.—p. 734.
Velocity of Pulmonary and Peripheral Venous Blood Flow and Related Aspects of the Circulation in Cardiovascular Disease: Their Relation to Clinical Types of Circulatory Failure. G. P. Robb and Soma Weiss, Boston.—p. 742.
Pulmonary Heart Disease in Pneumonoconiosis. J. M. Dyson, Hazelton, Pa.—p. 764.
*Effect of Localized Anoxemia on Electrocardiogram of Normal Subjects: Its Bearing on Mechanism of Attacks of Angina Pectoris. L. N. Katz, W. W. Hamburger and W. J. Schutz, Chicago.—p. 771.
Electrocardiographic Observations on Carotid Sinus Reflex. L. H. Sigler, Brooklyn.—p. 782.
*Action of Quinine and Quinidine on Patients with Transient Ventricular Fibrillation. S. P. Schwartz and A. Jezer, New York.—p. 792.
Venous Pressure in Thyroid Dysfunction. J. S. Golden and W. A. Brams, Chicago.—p. 802.

Electrocardiogram in Coronary Occlusion Complicated by Pericarditis.—Barnes states that the electrocardiograms of patients in whom acute coronary occlusion is complicated by pericarditis differ from the type of RST changes associated with uncomplicated, acute coronary occlusion. The typical feature of the electrocardiogram, seen in coronary occlusion associated with pericarditis in its early stages, consists of elevation or upward rounding of the RST segment in all leads. This may be followed by inversion of the T wave in all leads. In some instances it is followed by the development of a T pattern that can be classified definitely as a late relic of acute coronary occlusion. In the stage when the RST segment is elevated in all leads, the Q pattern may be typically developed, not only indicating infarction but also pointing to the situation of the infarct in the left ventricle.

Effect of Anoxemia on Electrocardiograms.—Katz and his associates found that the induction of generalized anoxemia in normal subjects produced a diminution in the amplitude of the T wave, at times leading to its inversion. At the same time the ST segment was depressed and at times became negative. Similar changes were produced by generalized anoxemia in patients suffering from angina pectoris. These electrocardiographic changes occurred without the appearance of anginal pain in the normal subjects and in four of six patients suffering from angina pectoris. However, two of the six patients with angina pectoris did develop typical mild anginal pain. The authors therefore conclude that some process in addition to anoxemia (or ischemia) is concerned in the production of the pain of angina pectoris. This process is a variable which prevents the accurate prediction of the occurrence of pain during induced anoxemia. Because of the variability in the results and of the hazard to the patient, the use of induced anoxemia as a test for the presence of angina pectoris is of questionable value.

Quinine and Quinidine in Ventricular Fibrillation.—Schwartz and Jezer administered quinine dihydrochloride and quinidine sulphate intravenously in graded doses to two patients with auriculoventricular dissociation who were subject to transient seizures of ventricular fibrillation. The drugs were injected when the basic idioventricular rate did not vary more than five beats per minute over a period of several hours prior to their use and when premature ventricular beats interrupted the basic rhythm. The number of these was counted for each minute during the hour preceding the injections. The tests were carried out at a time when it was definitely known that the patients had been free from syncopal seizures for at least twenty-four hours prior to the injections of the drug. Such patients with transient seizures of ventricular fibrillation responded variably to the same dose of both quinine dihydrochloride and quinidine sulphate at different times. The intravenous administration of small doses of quinine dihydrochloride (maximal dose 1¼ grains, or 0.11 Gm.) and quinidine sulphate (maximal dose one-third grain, or 0.02 Gm.) resulted in the development of either a prefibrillatory mechanism or transient periods of ventricular fibrillation within from one to nine minutes after the injection. Once the prefibrillatory mechanism is precipitated by the administration of the drug, recurrent periods of transient ventricular fibrillation may follow for several hours at a time. The intravenous injection of these drugs resulted in a more rapid appearance of ventricular fibrillation when premature ventricular beats were already present prior to the onset of the experiment. Since the intravenous use of these drugs precipitated transient periods of ventricular fibrillation in patients who are subject to such seizures, the use of such drugs by this method is contraindicated in such patients.

American Journal of Cancer, New York

21: 757-1036 (Aug.) 1934

Experimental Alteration of Malignancy with Homologous Mammalian Tumor Material: I. Results with Intratesticular Inoculation. A. E. Casey, New York.—p. 760.
*Id.: II. Intracutaneous Inoculation of Preserved Material. A. E. Casey, New York.—p. 776.
Carcinogenicity of Chrysene and Oleic Acid. A. C. Bottomley and C. C. Twort, Manchester, England.—p. 781.
*Bone Formation in Metastases of Osteogenic Sarcoma: Report of Case with Metastases to the Brain. W. G. Harding 2d, Wahroonga, Australia, and C. B. Courville, Los Angeles.—p. 787.
Primary Sarcoma of the Great Omentum. S. Sanes and F. E. Kenny, Buffalo.—p. 795.
Malignant Melanoma: Case Report. H. A. Ball, San Diego, Calif.—p. 805.
The Probability of the Chance Occurrence of Multiple Malignant Neoplasms. J. C. Bugher, Ann Arbor, Mich.—p. 809.
Is Cancer Becoming More Prevalent? C. Bolduan and L. Weiner, New York.—p. 825.
Tumors of Breast Related to Estrin Hormone. C. F. Geschickter, D. Lewis and C. G. Hartman, Baltimore.—p. 828.

Experimental Alteration of Malignancy.—Casey carried out experiments to determine whether a homologous tumor material that enhanced every observed phase of the rabbit tumor following intratesticular inoculation would have similar effects following intracutaneous inoculation into the flank. Groups of rabbits injected in the skin of the flank with the material and inoculated into the same or neighboring areas two weeks later with tumor were compared with control groups inoculated with the tumor alone. The results for the control animals confirmed previous experience that the rabbit tumor, although malignant following intratesticular inoculation, is a spontaneously regressing, nonmetastasizing growth following intracutaneous inoculation into the flank. Nevertheless, in the experimental animals treated with the homologous material a higher incidence of and more rapidly growing and lingering local tumors occurred. Distant metastases were discovered in a large proportion of the animals. The preserved material, in enhancing both the primary and the metastatic phases of the malignant change, is therefore not dependent on intratesticular inoculation and is able to overcome the natural resistance of the skin of the rabbit to this tumor. Sex and immaturity are not barriers to the action of this material.

Bone Formation in Metastases of Osteogenic Sarcoma.—Harding and Courville report a case in which all the metastatic foci of osteogenic sarcoma contained bone in a developmental or adult form. In the liver and the lungs some portions of this osteoid tissue were heavily impregnated with calcium, either distributed regularly, as in the case of adult bone, or deposited irregularly in excess, as is common in

abnormal calcification. The nodule in the occipital lobe, which had been roentgenographically visible, contained an abundance of calcium. The nodule in the left central region, separated from the bone by an intact dura and pia-arachnoid, revealed only the earliest evidences of calcium deposit, although osteoid tissue was more or less evenly and abundantly distributed throughout the entire mass. The greater abundance of calcium in the nodule in contact with dura and bone would seem to favor Grieg's view to the extent that a local source of calcium facilitates the process of adult bone formation even though it is not entirely necessary. This nodule was slightly larger and was probably the older of the two.

American J. Obstetrics and Gynecology, St. Louis

28: 161-318 (Aug.) 1934

Treatment of Dysmenorrhea by Resection of Presacral Sympathetic Nerves: Evaluation of End Results. V. S. Counseller and W. M. Craig, Rochester, Minn.—p. 161.

Pregnancy in Tuberculosis. G. T. Palmer, Springfield, Ill.—p. 173.

*Method of Study and Treatment of Menstrual Disturbances of Endocrine Origin. C. A. Elden, Rochester, N. Y.—p. 179.

Choice of Methods for Pregnancy Diagnosis. Leita Davy and R. A. Nason, Madison, Wis.—p. 186.

Ureteral Obstruction in Carcinoma of Cervix. L. S. Drexler and W. E. Howes, New York.—p. 197.

Plea for Alexander Method of Shortening Round Ligaments for Retroversion of Uterus. L. J. Ladin and J. O. Smigel, New York.—p. 206.

Infrequent Complications of Uterine Cancer, with Certain Clinical Observations. L. C. Scheffey, Philadelphia.—p. 214.

Endometriosis in Laparotomy Scars. E. A. Schumann and W. E. Parke, Philadelphia.—p. 222.

Lateral Pelvic Roentgenogram: Interpretation of Its Obstetric Value. J. B. Jacobs, Washington, D. C.—p. 227.

Changes in Cervical Mucous Membrane and Decidual Reaction in Cervix During Pregnancy. H. B. Levey, Kansas City, Mo.—p. 234.

*Pupillary Sign in Ruptured Ectopic Pregnancy. U. J. Salmon, New York.—p. 241.

Granuloma of Cervix. W. B. McGee, New Orleans.—p. 244.

Pregnancy in an Atretic Uterine Horn. J. M. Nokes, University, Va.—p. 250.

Death from Delayed Chloroform Poisoning. P. F. Olson and D. C. Beaver, Rochester, Minn.—p. 254.

Fatal Eclampsia at the Fifth Month with Complete Necropsy. R. D. Porter, Jenkintown, Pa.—p. 257.

Prenatal Prevention of Potential Hemorrhagic Disease of the New-Born: Supplementary Report. I. N. Kugelmass and J. E. Tritsch, New York.—p. 259.

Treatment of Functional Uterine Bleeding with Extract of Placenta. A. Gabrielianz, Chicago.—p. 262.

Congenital Rhabdomyoma of Heart. C. H. Ill and J. W. Gray, Newark, N. J.—p. 264.

Ovarian Pregnancy. S. M. Dodek, Washington, D. C.—p. 268.

Placenta Praevia Complicating Twin Pregnancy. J. F. Gallagher and L. D. Heaton, Fort Sam Houston, Texas.—p. 270.

Tuberculosis and Adenomyoma. A. F. Lash, Chicago.—p. 272.

Secondary Lymphogranulomatosis Vulvae. A. F. Lash, Chicago.—p. 274.

Tuberculosis of Fallopian Tubes, Uterus and Uterine Cervix. C. D. Hauch, Chicago.—p. 276.

Tuberculous Salpingitis Discovered Incidental to Salpingostomy. A. B. Hunt, Chicago.—p. 277.

Microscopic Visualization of Cervix Uteri. H. A. Sacks, Chicago.—p. 278.

Banti's Disease Complicating the Puerperium. Dorothy L. Ashton, Philadelphia.—p. 280.

Acute Thyroiditis Complicating the Puerperium. P. B. Wahrsinger, New York.—p. 281.

Lithopedion. C. G. Johnson and S. H. Wills, New Orleans.—p. 282.

Ruptured Uterus Following Classic Cesarean Section with Normal Birth During Interval. P. V. Fava, Newark, N. J.—p. 284.

Secondary Abdominal Pregnancy. E. C. Sage and C. R. Kennedy, Omaha.—p. 285.

Menstrual Disturbances of Endocrine Origin.—From a study of sixty cases of menstrual disturbances of endocrine origin, Elden states that it is obvious that there is no relation between the type of menstrual disturbance and the endocrine gland involved primarily. Often an impression from the history as to the gland involved primarily is wrong, as is borne out when the case is studied thoroughly. Diagnosis of menstrual disturbances should not be made on laboratory observations alone. One needs only to consider that a low basal metabolic rate may be due to either thyroid or pituitary. A low blood sugar content may be due to the suprarenals or the pancreas. Hypothyroidism and hyposuprarenalism are at times similar. It is therefore necessary to get all the clinical, physical and laboratory data together in order to establish a diagnosis. The subsequent course of the patient on specific therapy is the criterion of correct diagnosis. In order that menstrual disturbances may be treated correctly, the whole endocrine system should be investigated before treatment is instituted. Treatment is directed at the involved gland and varies according to the nature of the disturbance.

Pupillary Sign in Ruptured Ectopic Pregnancy.—During the course of the routine physical examination of a patient suspected of having a ruptured ectopic pregnancy, Salmon noticed a unilateral dilatation of the pupil. At laparotomy about a liter of fresh blood was found in the peritoneal cavity and the bleeding traced to a ruptured tubal ectopic gestation. After operation the pupils were found to be equal in size and remained so throughout the patient's convalescence. At the time of admission it was noted that the patient complained of severe right shoulder pain, and it was felt that the dilated pupil might, like the shoulder pain, be caused by the intra-abdominal hemorrhage. Accordingly, during the following ten months the pupils were carefully examined in all patients suspected of having an ectopic pregnancy. During this period sixteen patients with ruptured ectopic pregnancy were operated on, and in four of these, preoperatively, a unilateral dilatation of the pupil was noted, the dilatation disappearing in all cases after operation. In the four patients that had manifested a dilated pupil, shoulder pain was a prominent symptom. However, the dilated pupil and the shoulder pain were not always on the same side.

American Journal of Psychiatry, New York

91: 1-240 (July) 1934

Modern Psychiatry and Mental Healing. G. H. Kirby, New York.—p. 1.

Schizophrenia in Only One of Identical Twins: Case. J. Kasanin, Howard, R. I.—p. 21.

Bell's Mania: Acute Delirium. S. H. Kraines, Chicago.—p. 29.

Concerning Cause of Death in Certain Psychoses. G. M. Davidson, Ward's Island, N. Y.—p. 41.

Some Psychologic Concepts Related to View of Mental Health. W. Line, Toronto.—p. 51.

Physical Therapy. H. F. Hoffman, Allentown, Pa.—p. 59.

Wet Packs and Prolonged Baths: Clinical Study of Reactions to These Forms of Therapy. J. A. Kindwall and G. W. Henry, White Plains, N. Y.—p. 73.

Syphilis in Shakespeare's Tragedy of Timon of Athens. A. H. Woods, Iowa City.—p. 95.

Hughlings Jackson's Views on Degrees of Automatic Action, as Applied to Case of Catatonia. M. Levin, Harrisburg, Pa.—p. 109.

Effects of Sodium Amytal on Metabolism. W. Dameshek, A. Myerson and J. Loman, with assistance of Caroline Stephenson, Boston.—p. 113.

Insanity in Its Medicolegal Relations to Some Notable Criminal and Civil Cases: Tests of Responsibility. J. J. Kindred, New York.—p. 137.

Blood Pressure and Pulse Rate, Their Relationship to Convulsions and Frequency of Convulsions Under Influence of Oxygen Insufflation in Cryptogenic Convulsive States. J. Notkin, New York.—p. 147.

Atropine Treatment of Postencephalitic Parkinsonian Syndrome. F. M. Adams and P. L. Hays, Vinita, Okla.—p. 151.

Psychic Disturbances After Head Injuries. P. Schilder, New York.—p. 155.

Sequelae of Head Injury: Psychogenic Factor. I. Strauss and N. Savitsky, New York.—p. 189.

American Journal of Public Health, New York

24: 813-924 (Aug.) 1934

Effect of a Confidential Inquiry on Recorded Mortality from Syphilis and Alcoholism: Survey in the Westchester County Health District. M. Nicoll Jr. and Marjorie T. Bellows, White Plains, N. Y.—p. 813.

Study of Granite Cutting and Granite Cutters in Vicinity of New York City. Adelaide Ross Smith, New York.—p. 821.

Diphtheria Studies: I. Significance of Schick Test in the Adult. C. C. Young, W. E. Bunney, Minna Crooks, G. D. Cummings and F. C. Forsbeck, Lansing, Mich.—p. 835.

Official Reporting of Childhood Type of Tuberculosis. Jessamine S. Whitney, New York.—p. 850.

Outfit for Rapid Collection of Blood Samples. G. D. Cummings and F. C. Forsbeck, Lansing, Mich.—p. 852.

New Mechanism of Defence Against Bacteria Through the Use of Certain Foods. L. Arnold, Chicago.—p. 854.

Elements Involved in Determining the Qualifications of Health Officers. E. L. Bishop, Nashville, Tenn.—p. 859.

Epidemiologic and Clinical Study of an Influenza Epidemic in a College Community. C. E. Shepard, Stanford University, Calif.—p. 861.

Standard Blood Agar Plate in the Control of Scarlet Fever: Experience of a Rural Health Unit. H. R. O'Brien and R. P. Fowler, Oberlin, Ohio.—p. 870.

Medical Supervision in Public Schools. W. L. Gould, Albany, N. Y.—p. 873.

Use of Laymen in Official Public Health Nursing Programs: City. J. D. Dowling, Birmingham, Ala.—p. 880.

Qualifications and Training of Local Health Officers. T. Parran Jr. and D. M. Griswold, Albany, N. Y.—p. 887.

Annals of Internal Medicine, Lancaster, Pa.

8: 115-242 (Aug.) 1934

Biliary Dyskinesia. A. C. Ivy and P. Sandblom, Chicago.—p. 115.
Proliferative and Exudative Tuberculosis, with Reference to Their Relationship to Various Fractions Derived from Tubercle Bacillus. F. M. Pottenger, Monrovia, Calif.—p. 123.
Further Studies on Granulopenia: Report of Twelve Cases. S. R. Roberts and R. R. Kracke, Atlanta, Ga.—p. 129.
*Drug Idiosyncrasy, with Especial Reference to Amidopyrine as Cause of Agranulocytic Angina. T. Fitz-Hugh Jr., Philadelphia.—p. 148.
Diaphragmatic Hernia. C. A. Hedblom, Chicago.—p. 156.
The Q Deflection in Normal and Abnormal Human Electrocardiograms. C. Shookhoff and A. H. Douglas, Brooklyn.—p. 177.
Certain Bases of Physical Therapy. T. P. Sprunt, Baltimore.—p. 192.
The Diabetic Child: Etiologic Factors. H. J. John, Cleveland.—p. 198.
Psychologic Considerations in Treatment of Neuroses. A. H. Jackson, Washington, Conn.—p. 214.
Medical Aspects of National Health Insurance. G. Fleming, Montreal.—p. 220.

Drug Idiosyncrasy and Agranulocytic Angina.—In Fitz-Hugh's series of twenty-six patients, seventeen are known to have ingested amidopyrine just before and/or during the disease. A few well established negative instances, however, prove that amidopyrine cannot be accepted as the sole cause. Some of these nonamidopyrine cases may possibly be caused by idiosyncrasy to other drugs and substances (quinine, dinitrophenol, orthoiodoxybenzoate, neoarsphenamine, bacterial vaccine) or to a similar abnormal reaction (anaphylactoid) to foods, exogenous or endogenous toxins whether chemical or bacterial, or hormone substances or a conditioned deficiency. If the causal mechanism is of idiosyncratic or allergic nature, it must represent a special blood and bone marrow sequence of events heretofore unrecognized and different from the ordinary clinical and hematologic phenomena usually ascribed to such mechanism. From the standpoint of leukocyte behavior the mechanism seems to be more like that of acute anaphylactic shock in laboratory animals than human allergy. The therapeutic implications of the author's observations suggest the advisability of more specific attempts at elimination and detoxification, especially with regard to the liver as a possible seat of allergic disturbances.

Archives of Internal Medicine, Chicago

54: 161-314 (Aug.) 1934

Chronic Rheumatic Diseases of the Spine. J. L. Miller, Chicago.—p. 161.
*Periarteritis Nodosa (Necrotizing Arteritis) Associated with Rheumatic Heart Disease: Note on Abdominal Rheumatism. C. K. Friedberg and L. Gross, New York.—p. 170.
Some Cytologic and Serologic Aspects of Infectious Mononucleosis. C. A. Stuart, A. M. Burgess, H. A. Lawson and H. E. Wellman, Providence, R. I.—p. 199.
Concentration of Serum Protein in Different Types of Edema: Illustrative Cases. H. M. Hand, San Francisco.—p. 215.
*Cardiac Output in Relation to Cardiac Failure. T. R. Harrison, B. Friedman, G. Clark and H. Resnik, Nashville, Tenn.—p. 239.
Anemia: Classification and Treatment on Basis of Differences in Average Volume and Hemoglobin Content of Red Corpuscles. M. M. Wintrobe, Baltimore.—p. 256.
Pernicious Anemia: Parenteral Treatment with Extracts Prepared from Digested Equine Liver and from Self-Digested Stomach. A. E. Meyer, Rockford, Ill.; O. Richter and H. Legere, Chicago.—p. 281.
*Curability of Hay Fever After Preseasonal Pollen Treatment. I. C. Walker, Boston.—p. 289.
Modifying Action of Calcium and Sodium Bicarbonate on Salicylate Intoxication. H. E. Thompson and C. A. Dragstedt, Chicago.—p. 308.

Periarteritis Nodosa and Rheumatic Heart Disease.—Friedberg and Gross observed a significant association of periarteritis nodosa with rheumatic heart disease. Of eight cases of typical periarteritis nodosa verified at necropsy, four presented evidence of rheumatic heart disease: a history of rheumatic fever and the clinical observation of rheumatic cardiovalvular disease. Postmortem examination revealed characteristic gross and histologic features of rheumatic fever, including the presence of Aschoff bodies in every case. In addition to the eight cases, the diagnosis of periarteritis nodosa was made in five other cases at postmortem examination, two of which presented clinical evidence of rheumatic valvular disease. Postmortem examination revealed a verrucous endocarditis of the mitral valve in both cases and a large thrombotic mass involving an aortic commissure in one of them. Both cases ran the febrile course of a general infection accompanied by clinical evidences of glomerulonephritis. The evidence in the literature for the association of rheumatic fever and periarteritis nodosa is only of suggestive value. Aside from their four cases the authors have been unable to discover any others in which there was unquestionable rheumatic heart disease associated with periarteritis nodosa. It seems probable that many cases of periarteritis nodosa previously reported might have been regarded as presenting rheumatic cardiac lesions had they been studied from this point of view. In three of the four cases the symptoms of the final illness were due both to an acute attack of rheumatism and to the lesions of periarteritis nodosa. In the fourth case there were no obvious evidences of active rheumatic infection. Nevertheless, an acute rheumatic lesion was found in the heart. They conclude that they were not dealing with two unrelated diseases but that the periarteritis nodosa was one of the manifestations of the rheumatic infection. In two cases an attack of scarlet fever occurred within eight weeks preceding the final illness. Because of the brief interval between the attack and the obvious development of rheumatic heart disease as well as periarteritis nodosa, it may well be conjectured whether scarlet fever did not stand in some etiologic relationship to these diseases. This association could be employed to reason that not only the rheumatic fever but the periarteritis nodosa was intimately associated with the preceding infection by the scarlatinal organism. In one case, in addition to the periarteritis, the clinical and pathologic features of malignant nephrosclerosis were added to those of rheumatic fever. Fahr maintained that malignant sclerosis is the result of the activity of one or more of several toxic or infectious agents. In two cases the abdominal symptoms, so common in periarteritis nodosa, dominated the clinical picture sufficiently to lead to an exploratory operation. The authors suggest that, when acute abdominal symptoms are present in a patient suffering from rheumatic fever, complicating periarteritis nodosa should be considered. This complication is offered as an organic basis for some of the instances of so-called abdominal rheumatism.

Cardiac Output in Relation to Cardiac Failure.—Harrison and his associates studied the cardiac output of patients with cardiac disease by the acetylene method, modified in such a way as to allow the detection of inaccurate results. The cardiac output per minute of patients with congestive heart failure is usually from 10 to 30 per cent less than that of normal subjects but may be within the normal range. Patients without circulatory disorders may have an equally low cardiac output. The level of the cardiac output per minute, whether considered as such or in relation to the metabolic rate, bears no relation to the presence or absence of congestive failure, for: 1. The range and the average values of the cardiac output are similar for compensated and decompensated patients. 2. In a given individual, clinical improvement and disappearance of congestive phenomena may be associated with an increase, a decrease or no change in this function. In general, the output of the heart per beat tends to be somewhat less during congestive failure. The metabolic rate is normal in some patients and elevated in others. The authors interpret these observations as indicating that the "forward failure" (diminished output) hypothesis, which ascribes the clinical manifestations of congestive heart failure to an insufficient supply of blood to the tissues, is erroneous. They discuss the "backward failure" (back pressure) theory and conclude that there is much evidence in favor of it and no valid evidence against it.

Curability of Hay Fever.—Walker states that preseasonal treatment for hay fever offers a cure, provided the proper pollen extract is used, careful tests are made, and judgment is employed in the manner of treatment. Of the author's 734 patients who received treatment preseasonally for various periods ranging from one to eight seasons, 190, or 26 per cent, have remained free from hay fever. To this number might be added sixty-eight more who are on trial and who are anticipated to remain free from hay fever, to make the total 258, or 35 per cent. Since the largest number of failures occurred after one season of treatment, only half as many after the second season and half as many after the third season as after the second, it is evident that many failures following one season of treatment would result in benefits after a second season, and the same for the third season, provided treatment was continued. The largest number and likewise the highest percentage of cases of permanent relief followed treatment that was given for three, four, five and six successive seasons. The most marked diminution in the cutaneous reaction occurred in

these groups, although the patients who were treated only one or two seasons ran a close second. Of the 190 patients who have remained free from hay fever since the omission of treatment, eight have been free for three years, thirty-one for four years, seventeen for five years, twenty-five for six years, six for seven years, twenty-two for eight years, three for nine years, forty for ten years, twenty for eleven years, eight for twelve years and ten for thirteen years, and all are still free from hay fever.

Archives of Pathology, Chicago

18: 157-294 (Aug.) 1934

*Renal Glomerulus in Various Forms of Nephrosis. D. L. Wilbur, Rochester, Minn.—p. 157.
Active and Passive Pleat Formation of Joint Cartilage. E. Freund, Iowa City.—p. 186.
*Histologic Changes in Knee Joint in Various Infections. C. S. Keefer, F. Parker Jr. and W. K. Myers, Boston.—p. 199.
Thrombo-Angiitis Obliterans: Distribution of Lesion in Vessels of Leg. J. R. E. Morgan, Toronto.—p. 216.
*Generalized Torulosis Associated with Hodgkin's Disease. Marion S. Fitchett, Norfolk, Va., and F. D. Weidman, Philadelphia.—p. 225.
Influence of Various Diets on Experimental Amyloidosis in Mice. D. Y. Ku, Woosung, China, and M. A. Simon, Cleveland.—p. 245.
Chemical Study of Arteriosclerotic Lesions in Human Aorta. Dorothy R. Meeker and J. W. Jobling, New York.—p. 252.

Renal Glomerulus in Various Forms of Nephrosis.—Wilbur made a histologic study of the glomeruli in kidneys in cases of simple nephrosis in which the diagnosis was made post mortem. Ten cases of acute simple nephrosis presented distinct glomerular changes consisting primarily of irregular thickening of the glomerular basement membrane and less often of an increase in the number and swelling of the endothelial and epithelial cells of the tufts. In the majority of cases these changes were considered independent lesions, the result of associated hypertension, arteriosclerosis or other complicating renal disease. They did not resemble the lesions seen in cases of clinical glomerular nephritis. In thirty-one cases of acute simple nephrosis the glomeruli showed, as a rule, normal tufts with occasional minor variations consisting of variable amounts of débris, usually granular, in the capsular spaces, swelling, degeneration, a slight increase in the number of the endothelial or epithelial cells of the tufts and occasionally slight, irregular thickening of the glomerular basement membrane. These changes were probably degenerative and not suggestive of or similar to those observed in cases of glomerular nephritis or lipoid nephrosis. In thirteen cases of bile nephrosis in which the diagnosis was made at necropsy, the majority occurred in persons in whom the glomeruli appeared normal histologically, although a moderate amount of granular material was often noted in the capsular spaces. In six of these cases, slight swelling or proliferation of the endothelial cells of some of the tufts was observed. The epithelial cells of the basement membrane appeared normal essentially. These changes were slight and could not be correlated with the clinical observations. In three cases of chemical nephrosis the glomeruli appeared normal except for congestion, desquamation of many of the epithelial cells and granular material in the capsular spaces. The glomerular changes observed in two cases of eclampsia were similar to those described by Bell. In one case of hyperemesis gravidarum the glomeruli appeared normal, although granular material was noted in the capsular spaces. The renal lesion in eclampsia is probably secondary and, although it is distinct and probably degenerative, its nature cannot be stated at present.

Histologic Changes in Knee Joint in Various Infections.—Keefer and his co-workers studied the pathologic lesions of eight cases of infective arthritis due to streptococcic, gonococcic, meningococcic and pneumococcic infections and to an unidentified gram-negative coccus. The character of the change varied with the mode of infection, which occurred by way of the blood stream, by direct extension from an osteomyelitis or by direct extension from the skin overlying the joint. In the cases in which the infection of the joints occurred as a result of a hematogenous infection, the process began in the synovial connective tissue, with infiltration of polymorphonuclear, lymphoid and plasma cells about the blood vessels and between the strands of connective tissue. As the infection progressed, the synovial lining was destroyed and replaced completely by granulation tissue. Later the cartilage and bone were involved in the process and destroyed. When the bone was involved primarily, the predominating lesions were a destruction of bone and the overlying cartilage. The inflammation of the synovia showed a progression from the superficial to the deeper layers. The changes were characteristic of an inflammatory process and could be distinguished readily from degeneration. Aside from the mode of infection, the type of infecting organism, the effect of pressure, the character of the cellular reaction and the presence of antiferment substances in the synovial fluid determine the final pathologic state.

Generalized Torulosis Associated with Hodgkin's Disease.—Fitchett and Weidman report a case of generalized torulosis associated with Hodgkin's disease. The presence of extensive renal involvement calls attention to the necessity for examination of the urine for torula cells as they have been observed in the urine at least once. Attention is called anew to the possibility that the intestine may serve as the primary portal of entry for torulosis. Cases of Hodgkin's disease showing meningeal symptoms demand examination for torular infection.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

15: 449-512 (Aug.) 1934

Muscle Training and Reeducation Exercises in Anterior Poliomyelitis. L. Hubbard, Warm Springs, Ga.—p. 453.
Poliomyelitis: Personal Experience. R. D. Brown, Hammond, Ind.—p. 457.
Diathermy in Management of Medical Kidney Diseases. G. Kolischer, Chicago.—p. 459.
Electrosurgery in Ophthalmology. M. H. Cottle, Chicago.—p. 463.
Traumatic Myositis, with Hematoma and Calcification. J. C. Elsom, Madison, Wis.—p. 466.
Radiathermy: Important Advance in Short Wave Therapy. D. Kobak, Chicago.—p. 469.
New Type of Electrode for Diathermy and Electrocardiography. P. E. Jouard, Brooklyn.—p. 473.
Physical Therapy in Fractures. R. H. Kennedy, New York.—p. 474.
The Gastro-Intestinal Tract in Chronic Rheumatism. E. F. Traut, Chicago.—p. 479.
Treatment of the Colon as the Focus of Infection. R. L. Sexton, Washington, D. C.—p. 483.
Enema and Colonic Lavage. H. W. Soper, St. Louis.—p. 487.
Recent Hydrotherapeutic Observations in Arthritis. J. D. Currence, New York.—p. 490.

California and Western Medicine, San Francisco

41: 73-144 (Aug.) 1934

Nephrotomy: Its Indications, Limitations and Terminal Results. E. Hess, Erie, Pa.—p. 73.
Modern Obstetric Standards. Alice Freeland Maxwell, San Francisco.—p. 79.
California State Medical Library: Report for Second Year. C. D. Leake, San Francisco.—p. 82.
Heat Prostration: Its Treatment at Boulder Dam. R. O. Schofield, Boulder City, Nev.—p. 83.
Nonorganic Convulsive Disorders of Childhood, with Especial Reference to Idiopathic Epilepsy. I. McQuarrie, Minneapolis.—p. 86.
Urology in Medicine: Its Future Rôle. L. Michelson, San Francisco.—p. 91.
Serum Preservatives. M. S. Marshall, San Francisco.—p. 94.
Psittacosis. J. B. Luckie, Pasadena.—p. 98.
Plague. W. H. Kellogg, Berkeley.—p. 103.
Sarcoma of Testicle. T. A. Card and E. M. Bingham, Riverside.—p. 108.
Problem of Dementia Praecox. D. A. Macfarlane, Berkeley.—p. 110.
Compulsory Health Insurance. F. L. Hoffman, Philadelphia.—p. 114.
Finding Health Insurance Facts. C. H. Rowell, San Francisco.—p. 116.

Colorado Medicine, Denver

31: 259-292 (Aug.) 1934

Coronary Artery Disease in Hypothyroidism. H. A. Black, Pueblo, and R. H. Kampmeier, New Orleans.—p. 262.
Black Widow Spiders: Warning. Frances E. Becker and F. E. D'Amour, Denver.—p. 265.

Delaware State Medical Journal, Wilmington

6: 175-198 (Aug.) 1934

Septad of Mortality. A. C. Jost, Dover.—p. 175.
Undulant Fever. C. A. Sargent, Dover.—p. 179.
Id.: R. D. Herdman, Dover.—p. 181.
Alum Precipitated Toxoid in Prevention of Diphtheria. E. F. Smith, Dover.—p. 182.
Treatment of Pulmonary Tuberculosis. L. D. Phillips, Marshallton.—p. 184.
Tuberculin Testing in Delaware Schools: Preliminary Report. Laura E. McClure, Marshallton.—p. 186.
Value of Prenatal Care During Pregnancy. J. B. Derrickson, Frederica.—p. 189.
Vital Statistics: Why? J. R. Downes, Newark.—p. 191.
Public Works and Public Health: Opportunity for the Medical Profession. R. C. Beckett, Dover.—p. 192.

Indiana State Medical Assn. Journal, Indianapolis

27: 325-368 (Aug. 1) 1934

Newer Aspects of Radiotherapy, with Especial Reference to Carcinoma of Breast. L. A. Smith, Indianapolis.—p. 325.
Modern Phases of Nasal Sinus Abnormalcy. W. F. Clevenger, Indianapolis.—p. 329.
Primary Cancer of the Lung: Report of Case in a Boy Aged Ten. L. K. Gould, Fort Wayne.—p. 332.
Burns of the Eye. E. O. Alvis, Indianapolis.—p. 335.
Bichloride of Mercury Poisoning. L. R. Pearson, Indianapolis.—p. 337.
Constitutional Factor in Disease. E. F. Kiser, Indianapolis.—p. 340.
Apparatus for Suction-Siphonage. W. D. Little, F. B. Ramsey and J. E. Pilcher, Indianapolis.—p. 344.

27: 369-424 (Sept. 1) 1934

Puerperal Inversion of Uterus: Report of Instance. H. F. Thurston and F. Teague, Indianapolis.—p. 369.
Congenital Absence of Bile Ducts: Report of Case. E. W. Laboe, Fort Wayne.—p. 373.
Diet and Fluids in Pregnancy. P. MacKenzie, Evansville.—p. 376.
History of Birth Control in America. C. O. McCormick, Indianapolis. —p. 385.
Relation of Medical Legislation to Medical Education. W. N. Wishard, Indianapolis.—p. 391.

Iowa State Medical Society Journal, Des Moines

24: 425-468 (Aug.) 1934

Oration in Medicine: The Education of a Physician. G. B. Crow, Burlington.—p. 425.
Headache. F. A. Ely, Des Moines.—p. 429.
Nonspecific Immunotransfusions in treatment of Hemolytic Streptococcus Septicemia. E. E. Kottke, Des Moines.—p. 431.
Roentgen Ray Diagnosis of Nonopaque Foreign Bodies in Bronchi. E. L. Rypins, Iowa City.—p. 436.
Roentgen Visualization of the Liver and Spleen, with Thorium Dioxide Sol. L. G. Ericksen, Dubuque.—p. 438.
Indications for Thyroid Surgery. T. E. Davidson, Mason City.—440.

Johns Hopkins Hospital Bulletin, Baltimore

55: 85-170 (Aug.) 1934

Pneumococcic Lipoid Nephrosis and Relation Between Nephrosis and Nephritis: II. Experimental Studies. S. S. Blackman Jr., Baltimore.—p. 85.
Insomnia in Clinic Psychiatric Practice. W. Muncie, Baltimore.—p. 131.
Urobilin Excretion of Infancy and Childhood: Relation to Blood Destruction and Formation. H. W. Josephs, Baltimore.—p. 154.

Journal of Bacteriology, Baltimore

28: 111-220 (Aug.) 1934

Pleomorphism of Bacteria: I. Pleomorphism of Bacillus Paratyphi B. I. L. Kritschewski and I. W. Ponomarewa, Moscow, U. S. S. R.—p. 111.
Variations in Electrophoretic Mobilities of Brucella Groups. Dorothea E. Smith and Eleanore W. Joffe, Philadelphia.—p. 127.
Cell Inclusions and Endospore Formation in Bacillus Mycoides. I. M. Lewis, Galveston, Texas.—p. 133.
Some Practical and Theoretical Aspects of Mold Metabolism. O. E. May and H. T. Herrick, Washington, D. C.—p. 145.
Disagreement in Mitogenetic Experiments: Problem in Bacterial Physiology. O. Rahn, Ithaca, N. Y.—p. 153.
Growth and Metabolism of Mixed Cultures of Ammonia-Producing Micro-Organisms. J. E. Greaves, J. D. Greaves and Iola Hickman, Logan, Utah.—p. 159.
Comparison of Lead, Bismuth and Iron as Detectors of Hydrogen Sulphide Produced by Bacteria. C. E. Zobell and Catherine B. Feltham, LaJolla, Calif.—p. 169.
Note Regarding Lag Period. B. L. Herrington, Ithaca, N. Y.—p. 177.
Isolation of Obligately Anaerobic Bacillus from Feces of New-Born Infants and from Other Human Sources and Its Probable Identity with "Köpfchenbakterien" of Escherich, Rodella's "Bacillus III," and Bacillus Parapuntificus (Bienstock). I. C. Hall and M. L. Snyder, Denver.—p. 181.
*Comparative Study of Certain Mediums Used in Presumptive Tests for Bacterium Coli. M. P. Horwood and A. Heifetz, Cambridge, Mass. —p. 199.
Bacteria Decomposing Alginic Acid. S. A. Waksman, Clifton, N. J.; Cornelia L. Carey and M. C. Allen.—p. 213.

Comparison of Mediums Used in Presumptive Tests for Bacterium Coli.—In comparing certain mediums used in presumptive tests for Bacterium coli, Horwood and Heifetz found lactose broth to be the most sensitive when freshly isolated strains of fecal Bacterium coli were used. Brilliant green lactose peptone bile was second, the Dominick and Lauter medium third, and Salle's crystal violet lactose broth fourth. When suspensions of Bacterium aerogenes in water were employed, the same mediums were equally sensitive. When the waters were examined, lactose broth again proved to be the most sensitive presumptive test medium, with brilliant green lactose peptone bile showing almost the same degree of sensitivity. The other mediums were less satisfactory. The Dominick and Lauter medium yielded the greatest proportion of completed tests and the brilliant green lactose peptone bile was almost as good. Numerically, brilliant green lactose peptone bile yielded more completed tests than any other medium. The superior results obtained with lactose broth as a presumptive test medium cannot be explained necessarily on the ground that it is more susceptible to spurious presumptive tests. The inferior results obtained with the other mediums may be due to the inhibition or destruction of the so-called weaker strains of Bacterium coli, which may have sanitary significance. In view of this possibility, lactose broth still seems to be the best presumptive test medium available. Efforts to improve its effectiveness by suitable buffering, by shortening the period of incubation and by other means should be made before it is abandoned. The excellent results obtained with brilliant green lactose peptone bile indicate its value in the sanitary water analysis.

Journal of Comparative Neurology, Philadelphia

60: 1-184 (Aug. 15) 1934

Taste Fibers and the Fifth Nerve. Ruth E. Wirtanen and J. M. D. Olmsted, Berkeley, Calif.—p. 1.
Development of Nuclei and Tracts Related to Acoustic Nerve in the Pig. R. F. Shaner, Edmonton, Alta.—p. 5.
Innervation of Choroid Plexuses and Blood Vessels Within Central Nervous System. S. L. Clark, Nashville, Tenn.—p. 21.
Observations on Peripheral Course of Sensory Fibers in First Four Cervical Nerves of the Cat. J. C. Hinsey and K. B. Corbin, Palo Alto, Calif.—p. 37.
Results of Unilateral Pyramidal Section in the Rat. D. H. Barron, Albany, N. Y.—p. 45.
Mechanism of Vision: VIII. Projection of Retina on Cerebral Cortex of the Rat. K. S. Lashley, Chicago.—p. 57.
Development of Septum Medullae (Mammals: Cat). B. F. Kingsbury, Ithaca, N. Y.—p. 81.
Interpeduncular Nucleus of the Brain of Necturus. C. J. Herrick, Chicago.—p. 111.
Experimental Study of Rootlets of Vagus Nerve in the Cat. J. O. Foley and F. S. DuBois, University, Ala.—p. 137.
Thalamic Projection to Central Gyri in Macacus Rhesus. A. E. Walker, Chicago.—p. 161.

Journal of Immunology, Baltimore

27: 125-234 (Aug.) 1934

Studies on Tissue Reactions in Immunity: XV. Union Between Specific Antigen and Skin of Protein Immunized Rabbits. R. L. Kahn and Elizabeth B. McDermott, Ann Arbor, Mich.—p. 125.
Id.: XVI. Capacity of Different Tissues of Protein-Immunized Rabbits to Combine with Antigen. R. L. Kahn, Ann Arbor, Mich.—p. 143.
Changes in Caliber of Pial Vessels in Guinea-Pigs During Anaphylactic Shock. K. H. Finley, Boston.—p. 169.
*Mechanism of Antibody Formation After Extirpation of Antigen Depot. P. R. Cannon and K. L. Burt, Chicago.—p. 173.
Studies of Scarlet Fever: II. Different Toxins Produced by Hemolytic Streptococci of Scarlatinal Origin. S. B. Hooker and Edna M. Follensby, Boston.—p. 177.
Comparative Value of Fresh and Aged Tetanus Toxoid as an Immunizing Agent: Note. Harriet Leslie Wilcox, New York.—p. 195.
Poliomyelitis: Active Immunization: Method for Producing Detectable Amounts of Neutralizing Substance in Macacus Rhesus with Non-infective Mixtures of Immune Serum and Virus. S. D. Kramer, M. Schaeffer and W. H. Park, New York.—p. 199.
Formation of Precipitin for Group A Specific Carbohydrate of Streptococcus Hemolyticus in Rabbits Injected Intravenously and Subcutaneously. D. Seegal, M. Heidelberger and Elizabeth L. Jost, New York.—p. 211.
Prozone Phenomenon in Specific Bacterial Agglutination. F. S. Jones and Marion Orcutt, Princeton, N. J.—p. 215.

Antibody Formation After Extirpation of Antigen Depot.—Cannon and Burt made an attempt to determine the way by which the bacteria left the site of injection. The ears of rabbits, amputated within eight seconds after injection of a heavy suspension of staphylococci, were sectioned and stained with eosin-azure. Large masses of bacteria were seen in the loose subcutaneous tissues round blood vessels and a few bacteria were visible within the lumens of veins. Occasional cocci were seen also in lymph canals, but for the most part the micro-organisms appeared to seep into the veins and in that way became dispersed throughout the body. These observations furnish morphologic support to the conclusions reached by Roberts. Postulation of a new mechanism for the production of antibody after the removal of the antigen depot is

unnecessary, at least until proof is available that antibody formation may occur independently of the escape of antigen from the original depot.

Journal of Nutrition, Philadelphia

8: 125-252 (Aug. 10) 1934

Iron and Copper Retentions in Young Children. Amy L. Daniels and Olive E. Wright, Iowa City.—p. 125.
Influence of Previous Diet, Growth and Age on the Basal Metabolism of the Rat. Kathryn Horst, L. B. Mendel and F. G. Benedict.—p. 139.
Studies on Effect of High Doses of Irradiated and Nonirradiated Ergosterol on the Albino Rat. J. T. Hauch, Chicago.—p. 163.
Factors Which Determine Renal Weight: XVI. Nature of Protein Intake. E. M. MacKay and Lois Lockard MacKay, San Francisco.—p. 187.
Utilization of Energy Producing Nutriment and Protein as Affected by Individual Nutrient Deficiencies: I. Effects of Cystine Deficiency. R. W. Swift, O. J. Kahlenberg, L. Voris and E. B. Forbes, State College, Pa.—p. 197.
Disappearance of Vitamin C from Adrenals of Scorbutic Guinea-Pigs. A. E. Siehrs and C. O. Miller, Chicago.—p. 221.
Spectrum Analysis of Milk Ashes. W. F. Drea, Colorado Springs, Colo.—p. 229.
Adaptation of Paired-Feeding Method for Determination of Supplementary Value of Proteins. J. R. Haag, Corvallis, Ore.—p. 235.
Calcium and Phosphorus Content of Some Alabama Vegetables. Edna R. Bishop, Auburn, Ala.—p. 239.
Variation of Basal Metabolic Rate per Unit Surface Area with Age. M. Molitch and R. F. Cousins, Jamesburg, N. J.—p. 247.

Journal of Pharmacology & Exper. Therap., Baltimore

51: 371-506 (Aug.) 1934

Comparative Actions of Sympathomimetic Compounds: Bronchodilator Actions in Perfused Guinea-Pig Lungs. M. L. Tainter, J. R. Pedden and Martha James, San Francisco.—p. 371.
Studies on Coronary Circulation: IV. (A) Duration of the Coronary Dilator Action of Theophylline Ethylenediamine: (B) Effect of Insulin-Free Pancreatic Extract on Coronary Circulation. O. O. Stoland, A. M. Ginsberg, D. L. Loy and P. E. Hiebert, Lawrence-Kansas City, Kan.—p. 387.
Colorimetric Method for Determination of Nitrite in Blood. E. J. Stieglitz and Alice E. Palmer, Chicago.—p. 398.
Contribution to Pharmacology of Narcotine. N. Cooper and R. A. Hatcher, New York.—p. 411.
Effect of Tissue Extract and Other Vascular Depressor Substances on Isolated Intestines. Jean D. Craven, Lexington, N. C., and F. D. McCrea, Durham, N. C.—p. 421.
Effect of Dinitrophenol on Spontaneous Activity of the Rat. V. E. Hall and Margaret Lindsay, San Francisco.—p. 430.
*Diffusible and Nondiffusible Calcium in Blood and Cerebrospinal Fluid of Cats Intoxicated with Bulbocapnine and of Human Beings Under Bromide Treatment. S. Katzenelbogen, with technical assistance of T. J. Czarski, Baltimore.—p. 435.
Effects of Morphine and Its Derivatives on Intestinal Movements: III. Peristalsis. H. Krueger, Ann Arbor, Mich.—p. 440.
Diuretic Action of Pituitary Extracts and Responsible Principle or Constituent. K. I. Melville and D. V. Holman, Montreal.—p. 459.
Aconite: IV. Electrocardiographic and Pharmacologic Studies of Aconite and Its Alkaloids. J. B. Wolffe and J. C. Munch, Philadelphia.—p. 471.
*Effect of Dinitrophenol on Circulation Time. H. Freeman, Worcester, Mass.—p. 477.
Comparative Study of Hydrastine, Bicuculline and Adlumine. A. D. Welch and V. E. Henderson, Toronto.—p. 482.
Note on Bicucine. A. D. Welch and V. E. Henderson, Toronto.—p. 492.

Calcium in Blood and Cerebrospinal Fluid.—Katzenelbogen carried out studies in cats before and after the administration of bulbocapnine and also in human beings with low and high bromide contents in the blood. The observations show that it is the diffusible serum calcium that chiefly makes the decrease of the total blood calcium during bulbocapnine intoxication. The distinct changes in the diffusible part of the blood calcium, however, do not reflect on the calcium content of the cerebrospinal fluid, although symptoms of intoxication are marked. The calcium studies in cats before administration of bulbocapnine and those in human beings with low bromide concentration in blood show that in normal conditions the content of cerebrospinal fluid calcium is essentially equal to the content of diffusible calcium in the blood. The observations in both bulbocapnine intoxication in cats and in human beings saturated with bromide suggest that intoxication is apt to alter the normal balance of equality between cerebrospinal fluid calcium and diffusible blood calcium. Such alteration appears to be caused primarily by a drop in the diffusible blood calcium, as seen in the bulbocapnine experiments.

Effect of Dinitrophenol on Circulation Time.—Freeman gave nine male schizophrenic patients showing no apparent organic disease dinitrophenol (1-2-4) in amounts of from 3 to 5 mg. per kilogram of body weight daily for seven weeks. These amounts were sufficient to raise the oxygen consumption rates a mean of 28 points, resulting in a significant mean decrease in the circulation time of 6.2 seconds. A new level having been reached, no further variation in the circulation time was observed with an increase in the oxygen consumption.

Kansas Medical Society Journal, Topeka

35: 289-328 (Aug.) 1934

Unusual Hemorrhagic Disease Due to Hypocalcemia in Nutritional Anemia. M. Snyder, Salina.—p. 289.

Minnesota Medicine, St. Paul

17: 439-500 (Aug.) 1934

Indications for Operative Interference in Middle Ear Suppuration. H. Newhart, Minneapolis.—p. 439.
*Relief of Acute Asthma by Intravenous Administration of Concentrated Glucose Solution: Report of Cases. J. A. Lepak, St. Paul.—p. 442.
Eye in Cardiovascular Disease. A. E. Smith, Minneapolis.—p. 445.
Some Notes on the History of Epilepsy. G. R. Kamman, St. Paul.—p. 450.
How One Learns to Write. J. M. Thomas, Minneapolis.—p. 456.
Progress in Treatment of Carcinoma of the Stomach. W. Walters, Rochester.—p. 461.
Sacro-Iliac Tuberculosis. C. K. Petter, Oak Terrace.—p. 465.
Selection and Preparation of Prostatic Patients for Operation. C. D. Creevy, Minneapolis.—p. 467.
The Rise and Decline of Homeopathy. W. Ogden, St. Paul.—p. 472.

Intravenous Administration of Dextrose in Asthma.—Lepak treated four cases of bronchial asthma secondary to an infection of the upper respiratory tract by the intravenous administration of a 50 per cent solution of dextrose. The best results were obtained in the bedridden patients with 100 cc. of the dextrose solution given consecutively for two or three days. In the ambulatory type of patient, 50 cc. of the solution administered for several days gave encouraging results. A concentrated solution relieved the intensity as well as the frequency of the asthmatic attacks. The attacks of asthma sometimes were relieved completely for several months. The solution was heated to 95 F. to avoid constitutional reaction. This solution was administered slowly by syringe through a medium sized needle. Placing the arm in a horizontal position or even slightly lower than the forearm will aid in preventing the coagulation of blood in the vein. Occasionally, during the last part of the administration the patient may complain of soreness in the arm. The pain follows the course of the vein and is undoubtedly due to an irritation of the venous wall by the concentrated dextrose solution. It is possible that less concentrated solutions may give the beneficial pulmonary results and yet reduce the local danger of a thrombosis or phlebitis.

New England Journal of Medicine, Boston

211: 289-338 (Aug. 16) 1934

Prolan in Treatment of Abnormal Uterine Bleeding. J. V. Meigs, Boston.—p. 289.
Fetal Birth Injuries, with Especial Reference to Intracranial Lesions. P. B. Bland, Philadelphia.—p. 296.
Radium Therapy in Uterine Hemorrhages of Benign Origin: Analysis of End Results of One Hundred and Fifty Consecutive Personal Cases. L. E. Phaneuf, Boston.—p. 304.
Prevention and Control of Tuberculosis in Commonwealth of Massachusetts, with Especial Reference to Activities of the Massachusetts Tuberculosis League. F. T. Lord, Boston.—p. 312.
Annual Report of Executive Secretary of the Massachusetts Tuberculosis League. F. Kiernan, Boston.—p. 314.
Annual Report of the Educational Secretary of the Massachusetts Tuberculosis League. Jean V. Latimer, Boston.—p. 318.
Arthritis as Possible Manifestation of Allergy to Insulin. A. S. Johnson, Springfield, Mass.—p. 321.

211: 339-384 (Aug. 23) 1934

*Diabetes and Cancer. A. Marble, Boston.—p. 339.
Care of Syphilis in the Outpatient Department of the Boston City Hospital. J. G. Downing, Boston.—p. 349.
Another Case of Sporotrichosis in Connecticut. E. C. Weise, Bridgeport, Conn.—p. 353.
How Can the Individual or Family Secure the Best of Medical Care and Pay for It? C. Frothingham, Jamaica Plain, Mass.—p. 357.
Methods of Testing and Management of the Deafened School Child. E. P. Fowler, New York.—p. 364.
Simplified Concept of Arthritis. H. K. Thompson, Boston.—p. 370.
Restoration of Necropsied Bodies: Better Method. H. W. Williams and D. G. Henderson, Taunton, Mass.—p. 371.

Diabetes and Cancer.—Marble made an analysis of 256 cases in which malignant disease and diabetes were associated. These represent cases recognized among 10,000 diabetic patients.

Among the fatal cases, the average duration of diabetes was 7.1 years. The average duration of symptoms of cancer was 1.8 years. The conclusion is drawn that, in general, cancer develops in the diabetic patient and not diabetes in the patient having cancer. Evidence is lacking that cancer brings about the diabetic condition. A study of available data shows that the increasing percentage of cancer deaths to total deaths during the last two decades is greater among diabetic patients than among members of the general population. This is thought to be due, in part at least, to the fact that the increased longevity of diabetic patients during the last decade has placed relatively more diabetic than nondiabetic persons in the cancer age zone. It does not necessarily imply that the diabetic patient is any more likely to develop cancer than the nondiabetic person. The author's series includes thirty-three cases of carcinoma of the pancreas, of which twenty-one were diagnosed either at operation or at necropsy. The incidence of carcinoma of the pancreas was therefore extraordinarily high. It was 12.9 per cent of the total number of cases as contrasted with less than 5 per cent in the general cancer statistics reported by others. The average duration of symptoms of cancer in the twenty-one proved cases of carcinoma of the pancreas was one year; in these cases the average duration of diabetes was 3.4 years. The latter figure represents the shortest duration of diabetes of any group of diabetic patients under observation. Thus a possible relationship between cancer of the pancreas and diabetes is suggested. Figures from the literature, however, tend to indicate that diabetes is relatively uncommon in cases of carcinoma of the pancreas.

Ohio State Medical Journal, Columbus

30: 473-544 (Aug. 1) 1934

Studies in Hemolytic Jaundice. C. A. Doan, B. K. Wiseman and L. A. Erf, Columbus.—p. 493.

Pyloric Stenosis. R. D. Hostetter, Dayton.—p. 505.

Significance of Abdominal Pain from the Standpoint of the Urologist. F. W. Harrah, Columbus.—p. 509.

Pennsylvania Medical Journal, Harrisburg

37: 877-972 (Aug.) 1934

Acute Nephritis in Children: Rational Treatment. J. D. Lyttle, New York.—p. 877.

Small Volumes of Water Parenterally. W. J. Schatz, Allentown.—p. 886.

Management of Seropositive Latency in Syphilis. J. H. Stokes, Philadelphia.—p. 890.

Inoperable Vesicovaginal Fistula: Bilateral Transplantation of Ureters in Sigmoid Rectum. W. E. Lee and L. Herman, Philadelphia.—p. 894.

Jaundice: Observations of a Recent Epidemic in Roaring Creek Valley. H. F. Hunt, Danville; C. L. Johnston, Catawissa, and G. P. Moser, Ringtown.—p. 900.

Limitations of Official Medicine. T. B. Appel, Harrisburg.—p. 903.

Stria Malleolaris: Its Clinical Significance. G. W. Mackenzie, Philadelphia.—p. 906.

The Public Health Laboratory: Its Uses and Abuses. J. L. Laird, Philadelphia.—p. 910.

Traumatic Abdominal Emergencies. L. H. Landon, Pittsburgh.—p. 914.

Public Health Reports, Washington, D. C.

49: 959-980 (Aug. 17) 1934

Production of Specific Immunity in White Mice by Intranasal Inoculation with Encephalitis Virus (St. Louis Type). C. Armstrong.—p. 959.

Review of the Federal Civil Works Projects of the Public Health Service. C. E. Waller.—p. 960.

49: 981-1010 (Aug. 24) 1934

Tendencies in Standards of River and Lake Cleanliness. H. W. Streeter.—p. 981.

Recent Court Decisions on Milk Control. J. A. Tobey.—p. 993.

49: 1011-1050 (Aug. 31) 1934

Maximal Temperatures and Increased Death Rates in Drought Area. S. D. Collins and Mary Gover.—p. 1015.

*Experimental Lymphocytic Choriomeningitis of Monkeys and Mice Produced by Virus Encountered in Studies of 1933 St. Louis Encephalitis Epidemic. C. Armstrong and R. D. Lillie.—p. 1019.

Lymphocytic Choriomeningitis Produced by Virus of St. Louis Encephalitis Epidemic.—Armstrong and Lillie describe a virus that was encountered during monkey-to-monkey transfer of infection from a patient who died during the 1933 St. Louis epidemic of encephalitis. From the pathologic picture produced by intracerebral inoculation of monkeys and mice, they designate the virus as the virus of experimental lymphocytic choriomeningitis. It is apparent to the authors that the virus is distinct from the 1933 St. Louis encephalitis strains for the following reasons: 1. Cebus monkeys and guinea-pigs refractory to encephalitis strains succumb to the choriomeningitis strains. 2. The usual incubation period of from four to ten days in monkeys is shorter than is usual with encephalitis strains (from eight to fourteen days). In white mice the reverse is true: from six to nine as compared to from four to eight days with the encephalitis virus. 3. Infected monkeys are less tremulous, less excitable, less active, more prone to refuse food and appear much more ill than do encephalitis-infected animals, while in white mice the more pronounced tremors, which pass into a striking tetanic, often fatal, convulsion, not observed in encephalitis mice, offer a striking contrast. 4. The virus is almost constantly found in the blood and spinal fluid of monkeys during the febrile stage, while the encephalitis virus has not been demonstrated in these fluids during this period. 5. The choriomeningitis virus fails to produce detectable symptoms in mice when introduced intranasally, while the encephalitis virus takes readily by this route. 6. The changes produced by the two viruses in mice and monkeys is usually readily distinguishable. 7. Cross neutralization tests indicate that the viruses are immunologically distinct. Furthermore, the choriomeningitis virus does not correspond in its characteristics with those described by various Japanese investigators who have reported the isolation, usually in rabbits, of strains of virus from cases occurring during the outbreaks of encephalitis in Japan, which were epidemiologically and clinically quite similar to that of St. Louis. 8. The virus does not possess the characteristics of a herpes virus; moreover, rabbits inoculated intracerebrally with the choriomeningitis virus without apparent results readily succumbed to intracerebrally administered herpes virus given thirty-four days later. Neither does it correspond with any described virus of which the authors are aware, for which reason they consider it to be a heretofore undescribed infectious agent of which the significance in nature is at present unknown.

South Carolina Medical Assn. Journal, Greenville

30: 157-178 (Aug.) 1934

Conservative Treatment of Eclampsia. J. R. McCord, Atlanta, Ga.—p. 159.

Drugs That Forty-Five Years of Experience Have Taught Are Most Useful. J. H. McIntosh, Columbia.—p. 161.

Southern Medical Journal, Birmingham, Ala.

27: 667-746 (Aug.) 1934

Intraventricular Tumors of the Cerebrum: Study of Eight Cases, Including Two Lateral Ventricle Meningiomas. E. F. Fincher Jr., Atlanta, Ga.—p. 667.

After Effects of Irritant Gases: Residual Pulmonary Lesions. A. R. Koontz, Baltimore.—p. 676.

Radium Treatment of Epithelioma of the Eyelid. H. Hailey, Atlanta, Ga.—p. 681.

Visualization of the Liver and Spleen as a Diagnostic Aid in Abdominal Conditions. J. E. Hirsh and B. F. Morton, Birmingham, Ala.—p. 683.

Roentgen-Ray Study of the Prostatic Urethra, with Especial Reference to Resection. W. W. S. Butler Jr. and C. H. Peterson, Roanoke, Va.—p. 690.

Thymic Dangers. R. E. de la Houssaye, New Orleans.—p. 694.

Thrombo-Angiitis Obliterans as a General Vascular Disease. T. P. Sprunt, Baltimore.—p. 698.

Traumatic Arteriovenous Aneurysm: Report of Case Involving Posterior Tibial Vessels of Both Legs, with a Summary Discussion of Literature on Arteriovenous Aneurysm. W. H. Parsons and W. G. Weston, Vicksburg, Miss.—p. 703.

Fractures of the Os Calcis. J. E. Stewart, St. Louis.—p. 711.

Rupture of the Bladder. E. G. Ballenger, O. F. Elder and H. P. McDonald, Atlanta, Ga.—p. 713.

Experimental Pneumococcic Nephrosis and Its Relation to Glomerulonephritis. S. S. Blackman Jr., Baltimore.—p. 715.

Sinus Thrombosis and Thrombophlebitis Complicating Mastoiditis: Case Reports. E. G. Gill, Roanoke, Va.—p. 718.

Trachoma in the Native White Population of the United States. C. E. Rice and A. A. Drake, Rolla, Mo.—p. 728.

Transverse Rupture of the Aorta: Relationship to Sudden Death with Theories Concerning Etiology and Mechanics of Its Occurrence. J. C. Norris, Atlanta, Ga.—p. 733.

Teaching Bacteriology as a Part of the Function of the Department of Medicine. D. T. Smith, Durham, N. C.—p. 734.

Teaching of Bacteriology in a Department of Medicine. R. S. Muckenfuss, St. Louis.—p. 735.

Classic Cesarean Section for Fulminating Eclampsia, with Subarachnoid Hemorrhage and Pyelitis. G. Baughman, Richmond, Va.—p. 738.

Tennessee State Medical Assn. Journal, Nashville

27: 283-330 (Aug.) 1934

Agranulocytosis: Report of Case, with Especial Reference to Certain Barbiturates as Cause of the Disease. W. H. Witt, Nashville.—p. 283.
*Peripheral Vasodilating Effect of Theobromine Given Orally and Intravenously. C. E. Newell, Chattanooga, and E. V. Allen, Rochester, Minn.—p. 291.
The Care of the Hyperthyroid. L. K. Gibson, Johnson City.—p. 297.
Psychopathic Personalities and the Law. J. P. Gilbert, Nashville.—p. 302.
Some Aspects of Otosclerosis. H. K. Cunningham, Knoxville.—p. 306.
Diabetes Insipidus: Its Treatment with Oral Administration of Pituitary Gland. F. T. Mitchell, Memphis, and B. T. Bennett, Bolivar.—p. 310.
Congenital Anomaly and Extrahepatic Ducts of Gallbladder. C. V. Croswell, Memphis.—p. 316.

Peripheral Vasodilating Effect of Theobromine.—Encouraged by the vasodilatation following the intravenous administration of theobromine, Newell and Allen made studies on the response of the temperature of the skin to the oral administration of theobromine. Twenty experiments were done on fifteen patients with thrombo-angiitis obliterans or thromboarteriosclerosis obliterans. The response of the cutaneous temperature to the oral administration of theobromine was less than 1 degree in five instances, and between 1 and 2 degrees C. in seven instances. There were only eight instances in which the increase in temperature of the skin exceeded 2 degrees C. Comparison was made with the vasodilatation following artificial induction of fever by the intravenous injection of typhoid vaccine in thirteen instances. The average increase in the temperature of the skin caused by theobromine was 1.8 degrees C., while that caused by artificially induced fever was 4.2 degrees C. The average duration of the increase in the temperature of the skin following the ingestion of theobromine was two hours. In this regard the drug is much less efficient than typhoid vaccine intravenously injected, for the vasodilatation induced by the latter ordinarily lasts for many hours. The oral administration of theobromine may be of some value in instances in which it is inadvisable to use methods of greater value (typhoid vaccine, sympathectomy). It may be used as an adjunct to these methods of treatment.

Wisconsin Medical Journal, Madison

33: 553-644 (Aug.) 1934

Maxillofacial Injuries. M. N. Federspiel, Milwaukee.—p. 561.
Id. R. P. Gingrass, Milwaukee.—p. 568.
Rationale of Bromide and Belladonna Therapy in Treatment of Peptic Ulcer. J. H. Robbins, Madison.—p. 571.
Headaches from the Standpoint of the Neurologist. A. I. Rosenberger, Milwaukee.—p. 576.
*Calcification of Gallbladder: Report of Case. T. J. Snodgrass, Janesville.—p. 578.
Pellagra. E. F. Andre, Kenosha.—p. 581.
The Purposes of Prenatal Care. R. E. McDonald, Milwaukee.—p. 584.
Arteriovenous Aneurysm: Its Effect on the Heart: Brief Review of Literature and Report of Case. J. Dean and J. C. Dean, Madison.—p. 587.
Iodine in the Treatment of Exophthalmic Goiter. S. F. Haines, Rochester, Minn.—p. 592.
Ambulatory Treatment of Varicose Veins in the Clinics of Vienna and London. H. L. Miller, Milwaukee.—p. 595.
Treatment of Tuberculosis in General Practice VI. A. L. Banyai, Wauwatosa.—p. 597.

Calcification of Gallbladder.—Snodgrass reports a case of calcification of the gallbladder in which calcification of the whole wall occurred and in which only two large stones were present, one of which completely blocked the cystic duct. The final diagnosis was cholelithiasis, cholecystitis and calcification of the wall of the gallbladder. Robb believes that, if contraction and pressure atrophy can cause a calcification, a simple dilatation atrophy can do the same. He cites a specimen in which the gallbladder was markedly dilated and the cystic duct was blocked by only one gallstone. He explains the calcification on the basis of a blockage, resulting in a mucocele with consequent distention, loss of function leading to atrophy in the muscular strata, fibrous replacement and finally calcification. Calcification has taken place in the wall and the duct round the gallstone, and similar to the author's case the part of the cystic duct lower down remained normal, indicating, as Robb believes, that the stress of dilatation and of contraction and pressure atrophy are the chief causal factors in the calcification.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 241-290 (Aug. 11) 1934

Encephalitis. W. G. Wyllie.—p. 241.
Typhus Fevers in the Tropics. J. Megaw.—p. 244.
*Medicinal Treatment of Chorea (Calcium Aspirin). N. Mutch.—p. 246.
Thrombosis of the Penis and Urethral Hemorrhage. C. Morson.—p. 249.
Postural Drainage of the Lungs. H. P. Nelson.—p. 251.

Medicinal Treatment of Chorea.—Mutch believes that calcium acetylsalicylic acid (calcium aspirin) possesses the means of dealing simultaneously with the three etiologic factors of chorea: rheumatism, nervous strain and calcium deficiency. It supplies an adequate amount of calcium, produces a useful sedative effect on the brain, and combats the rheumatic element if given in appropriate doses. It dissolves readily in water (1 Gm. dissolves in 5 cc.) and forms a neutral solution suitable for administration by vein or subcutaneously, as well as by mouth. By crystallization from a solution of calcium chloride a form of calcium acetylsalicylic acid is obtained with a stability approximately equal to that of the parent acetylsalicylic acid itself. The author's nineteen patients were kept in bed. A light, mixed diet was given. The only drug employed (exclusive of aperients) was calcium acetylsalicylic acid (Coplans), dissolved in water and administered by mouth. The average daily dose varied up to 45 grains (3 Gm.) for a child 12 years of age. The rapidity of response did not vary accurately with the original severity of the choreic movements; mild cases sometimes proved more resistant than severe ones. The attack was not registered as over until the condition had so far improved that an average medical man would have had difficulty in diagnosing the case as one of chorea. Spontaneous movements had ceased. Voluntary movements were of average accuracy, and the patient could sustain a steady grip of the hand for a minute or more without fluctuation. The average time taken to control the chorea was seventeen days, and the limits were seven to forty-six days, respectively. The drug diminished the discomforts of the patients at all stages of treatment and did not produce any mental depression, undue drowsiness or digestive derangement. There was no relapse or secondary exhaustion when the drug was withdrawn finally.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

41: 509-668 (Aug.) 1934

Ancient and Modern. A. L. Robinson.—p. 509.
Antenatal Care in the Netherlands. J. G. Salomonson.—p. 533.
Terms of Admission and Training of Midwives at Government Training College for Midwifery in Rotterdam. Wesselink.—p. 562.
Regeneration of Uterine Mucosa in Connection with Myomas and Endometriosis. de Snoo.—p. 568.
New Technic in Dealing with Superior Rectovaginal Fistulas. N. M. Bey.—p. 579.
Abdominal Hysterectomy: Notes on Three Hundred Cases. M. L. Treston.—p. 588.
*Early Rupture of Membranes in Treatment of Eclampsia. W. Stroganoff.—p. 592.
*Vesicovaginal Fistula Resulting from Simple Ulceration of Prolapse in an Old Woman: Case. May Ratnayeke.—p. 597.
Acquired Atresia of Vagina and Its Cure by Plastic Operation: Case. May Ratnayeke.—p. 599.
Multiple Fibromyomas of Uterus in Association with Ovarian and Anal Fibromyoma: Report of Case. Jocelyn Moore.—p. 602.

Rupture of Membranes in Treatment of Eclampsia.—Stroganoff advocates early rupture of membranes in the treatment of eclampsia. By the early rupture he means rupture when the os is closed or not larger than 2 inches. The membranes should not be ruptured in the transverse position or in the presentation of the cord. Rapid delivery followed rupture of the membranes. Even when labor had not commenced, delivery occurred within an average of twenty-two hours and six minutes. There were seventy-four primiparous and twelve multiparous patients. The reduction in the number of fits following the rupture of membranes was unexpected. In fifty of eighty-seven cases not a single fit was observed to occur prior to delivery following rupture of the membranes. Of this number three patients had fits subsequent to delivery. In preeclamptic cases the effect of the operation was also favorable: only two of six patients had fits prior to delivery and the other four had fits only after delivery. The author believes

that the favorable results obtained by early rupture of the membranes may be explained by a number of theoretical considerations. Following the discharge of from 150 to 400 cc. of the amniotic fluid, the uterus becomes smaller and the pressure in it is lessened and, further, the absorption of the amniotic fluid containing certain ferments and extractive substances into the mother's circulation is thus reduced. Together with the decrease in the size of the uterus, the contents of the abdominal cavity are also reduced in volume and the intra-abdominal pressure in it is lowered, at least for a certain period of time, which results in the abdominal organs being better supplied with blood. The diaphragm descends somewhat lower and its excursions become less restricted, oxidation of the blood is improved and all the organs of the body, and especially those of the abdominal cavity, come under better conditions of nutrition and respiration. The heart is also under more favorable conditions. The changes are small, but their importance cannot be denied. It may be that nervous and, especially, vasomotor reactions due to the rupture of membranes, with all its consequences, are of still greater importance. The author believes that an insufficient oxygen content in the blood is a most important factor in the development of severe eclampsia. The technic consists in dilating the cervical canal and then rupturing the membranes. When the os admits one finger or more, the use of dilators is unnecessary.

Vesicovaginal Fistula.—Ratnayeke presents a case of vesicovaginal fistula resulting from ulceration of a prolapse. Under open ether, the vaginal mucosa was raised off the bladder by the flap method, much difficulty being experienced owing to thick cicatricial tissue. The vesical wall with the fistula was exposed. The fistula, being small, was closed with a purse string of fine silk. The vaginal mucosa was approximated by a continuous catgut suture. A self-retaining catheter was introduced and continued to be used for seven days. The patient made a good recovery. The secondary operation for repair of the perineum was undertaken two weeks later with an uneventful convalescence. The author stresses the following points of the case: 1. Ulceration of a prolapse due to friction from clothing had extended so deeply at one spot as to involve the vesical wall and mucosa, resulting in the formation of a fistula. 2. The patient passed small quantities of urine frequently and was not conscious of the dribbling, except as what she called a watery discharge. 3. Healing of the ulceration produced sufficient cicatrization and shortening of the anterior vaginal wall to cure the prolapse partially. 4. The existence of the fistula was detected almost by accident. Failure to detect it would have resulted in an unsatisfactory operation for repair of the pelvic floor with leakage of urine interfering with healing. The value of a preliminary cystoscopic examination before repair of the pelvic floor is undertaken is stressed. Pyelography is invariably carried out at some clinics to eliminate the existence of kinking of a ureter and hydronephrosis.

Journal of Tropical Medicine and Hygiene, London

37: 209-224 (July 16) 1934

Pathogenic Factors in Ascariasis. R. Girges.—p. 209.
Pellagra in the Sudan. N. L. Corkill.—p. 214.

Lancet, London

2: 291-342 (Aug. 11) 1934

Toxemias of Pregnancy. Louise McIlroy.—p. 291.
Lymphadenoid Tissue of Upper Respiratory Tract. H. V. Forster.—p. 296.
Ancylostoma Anemia and Its Treatment by Iron. A. G. Biggam and P. Ghalioungui.—p. 299.
Subarachnoid Hemorrhage in General Practice. J. N. Gale.—p. 304.
Presbyacusis and Its Treatment. M. Yearsley.—p. 306.
*Pain of Herpes Zoster Treated with Pituitrin. F. H. Gillett.—p. 307.
Evipan Sodium as Anesthetic in Pulmonary Tuberculosis. M. Lask and J. H. Crawford.—p. 308.

Pain of Herpes Zoster Treated with Solution of Pituitary.—Gillett presents three cases in which solution of pituitary was used for the treatment of herpes zoster. He has found that the injection of solution of pituitary is an uncertain and by no means an infallible treatment. It appears to act most dramatically when the pain is most intense. He can at present offer no explanation of why this should be so, but the treatment is a valuable asset to the practitioner in his attempt to relieve a patient from the pain accompanying herpes zoster.

Practitioner, London

133: 129-224 (Aug.) 1934

General Medical Aspects of Holidays. H. Rolleston.—p. 129.
Common Minor Soft Tissue Injuries and Their Treatment. W. D. Doherty.—p. 132.
Medical Memoranda on Mountaineering. C. Wilson.—p. 141.
Health Cruises and Prophylaxis in Sea Sickness. T. G. Maitland.—p. 146.
Cruises and Climates: Notes. F. E. Storey.—p. 156.
Bathing. R. Cove-Smith.—p. 164.
*Some Rare but Clinically Important Conditions. J. W. Linnell and H. A. Dunlop.—p. 174.
Surgical Aspects of Heart Disease. G. Slot.—p. 184.
Diathermy in the Treatment of Diseased Tonsils. J. A. L. Cook.—p. 194.
Walter Cromer: Physician to King Henry the Eighth. R. R. James.—p. 200.
Medicolegal Problems in General Practice: VIII. National Health Insurance: Legal Position and Obligations of the Insurance Practitioner. H. G. Dain.—p. 208.

Rare but Clinically Important Conditions.—Linnell and Dunlop discuss conditions that almost never occur in the experience of an average practitioner but that are worthy of serious consideration as being of surpassing interest. Chronic pulmonary tuberculosis of the adult type almost never occurs in young children. In disease of the cardiovascular system the mitral valves are almost never merely retracted through the effects of rheumatic endocarditis so as to cause a wider aperture than usual and thus simple regurgitation. Pain in the right side accompanied by marked pyrexia is almost never, if ever, due to acute appendicitis, if there have been rigors. The victim of a sudden perforation of the stomach or intestine is usually seized with excruciating abdominal pain and lies remarkably still. Retention of urine is not uncommon in hysterical states. Incontinence, on the other hand, in adult life, is almost never encountered in "functional" disorders and should always be looked on as a sign of organic disease affecting the central nervous system. A patient suffering from acute arthritis with fever, who is not considerably better after forty-eight hours of treatment by full doses of salicylates, almost certainly does not have rheumatic fever. Addison's disease should never be diagnosed in the presence of a high or even normal blood pressure. Almost never is the systolic blood pressure in Addison's disease, when diagnosable, above 100 mm. of mercury. A rash that itches to any degree is almost never syphilitic. A pustular rash that involves the trunk more than the face, the wrists and the hands is almost never due to smallpox. A malarial patient, continuously resident two years in a nonmalarial country, almost never suffers from malaria, however much he may protest to the contrary. The connection between acute rheumatism and erythema nodosum has never been proved, though till comparatively recently it has been generally accepted. Whatever its cause or causes may be, one thing is certain: almost never, if ever, does endocarditis result; it runs its course, whatever treatment is given, and clears up without sequelae. A "breakdown" is almost never due to overwork, so long as both work and environment are congenial. An unpleasant situation is almost always present and is to be looked for.

Japanese Journal of Experimental Medicine, Tokyo

12: 199-332 (June 20) 1934

Study on Decomposition of Some Monosaccharides by Mammalian Blood. H. Murata.—p. 199.
Pathogenic Agent of "Hasami Fever" (Spirochaeta Autumnalis). T. Abe.—p. 255.
Physical and Chemical Characteristics of Bacteriophage. K. Muramatsu.—p. 271.
The Purifying of Diphtheria Toxoids. S. Hosoya, T. Tanaka and K. Kagabe.—p. 277.
Investigations on Bacillus Histolyticus. T. Mita.—p. 285.
Mechanism of Hemo-Agglutination and Hemolysis and Also on Relation Between Them. H. Moriyama.—p. 299.

Japanese Journal of Gastroenterology, Kyoto

6: 1-12 (April) 1934

Significance of Liver in Metabolism of Lipoid Bodies: III. Changes in Lipoid Bodies in Blood and Bile When Various Kinds of Bile Acids Are Administered. Y. Asoda.—p. 1.
Significance of Pigments in Treatment of Infection of Bile Ducts: Report I. Experimental Studies in Treatment of Typhoid Bacillus Carriers. C. Takahashi.—p. 7.
Id.: Report II. Experimental Studies in Treatment of Bile Ducts Infected by Bacillus Coli, Staphylococcus Albus and Flavus. C. Takahashi.—p. 10.

Journal de Chirurgie, Paris

44: 161-319 (Aug.) 1934

Chronic Bone Liquefying Abscess from Staphylococcus. P. Moulonguet and J. Rousset.—p. 161.
Total Gastrectomy in Man. J. Ducuing, C. Soula and R. Fränkel.—p. 175.
*Fractures of Anterior Edge of Lower Extremity of Radius. G. Rousseau and C. Adamesteanu.—p. 211.

Fractures of Anterior Edge of Lower Extremity of Radius.—Rousseau and Adamesteanu consider fractures of the anterior edge of the lower extremity of the radius with the preceding carpal subluxation that accompanies it a rare condition but a clinical entity that one is justified in studying. The exact etiology is uncertain, though it is a condition of adults. It has been reproduced experimentally on the cadaver by increasing the push of the anterior surface of the horizontally placed scaphoid against the anterior articular margin of the radius. The diagnosis is not impossible to make clinically but should have roentgenologic confirmation. Treatment in recent cases consists in rapid mobilization of the articulation to avoid joint stiffness. When combined with carpal subluxation, the deformity must first be reduced under general anesthesia. In old cases nothing is to be hoped from orthopedic treatment. Surgical intervention by the anterior route with osteotomy of the callus, reduction of the luxation and replacement of the detached fragment in good position must be done.

Paris Médical

2: 1-32 (July 7) 1934

Diseases of Nutrition in 1934. F. Rathery and M. Rudolf.—p. 1.
*Instability of Glycemia in Course of Cure by Insulin in Some Diabetic Children. P. Mauriac and M. Traissac.—p. 14.
Dystrophic Lymphatism of Childhood and Puberty. G. Mouriquand.—p. 17.
Beriberi, Obscure Disease of Alimentary Disequilibrium. Fabry.—p. 23.
Insulin Factor of Cicatrization. P. Barral.—p. 28.

Instability of Glycemia in Diabetic Children.—Mauriac and Traissac report the cases of two diabetic children in whom a narrow margin existed between hyperglycemia and hypoglycemia and insulin shock. In both children (aged 3 and 7 years) glycosuria of several grams continued in spite of a diet of 120 Gm. of carbohydrate and 20 units of insulin, and 150 Gm. of carbohydrate and 18 units of insulin, respectively. In both, also, the smallest increase in insulin or the slightest decrease in carbohydrates sufficed to cause hypoglycemic symptoms. If, on the other hand, the insulin was reduced as little as 2 units the glycosuria increased markedly and was accompanied by signs of diabetes-polyuria, thirst and asthenia. This syndrome has been encountered by the authors only in infantile diabetes. They believe that the disorder thus revealed is essentially one of regulation and illustrates the complex neuro-endocrine-sympathetic origin of such diabetes.

Schweizerische medizinische Wochenschrift, Basel

64: 721-740 (Aug. 4) 1934

Physical Therapy of Cardiac and Circulatory Diseases. Frey.—p. 721.
*Treatment of Gastric and Duodenal Ulcer with Modified Sippy Method. A. Albrecht.—p. 724.
Rupture of Spleen. H. Renfer.—p. 732.
Circulatory Disturbances and Their Significance for Public Health. S. Zurukzoglu.—p. 732.
Reform of Medical Education in France. A. Schüler.—p. 739.

Modified Sippy Treatment of Gastric Ulcer.—Albrecht states that a modified Sippy treatment has been employed for the past several years at the medical clinic in Zurich. He gives a tabular outline of the method which indicates that small amounts of food (in the first few days only milk and cream and later additions of solid foods) are given on the full hour from 6 o'clock in the morning until 7 o'clock in the evening inclusive, and he points out that the new procedure differs from the original Sippy treatment in the manner of reduction of the acidity. Attempts are made to decrease the secretion by a belladonna preparation that exerts a favorable influence also on the motility. The acidity of the gastric juice is reduced by the administration of dispersed aluminum hydroxide. These medicaments are administered in such a manner that a measure (approximately from 3 to 4 Gm.) of the aluminum preparation is given at half an hour after 6, 7, 9, 10, 12, 1, 3, 4, and 6 and at 8, and 15 drops of an extract of belladonna leaves at 8:30 and 2:30, and 10 drops of the same substance at half an hour after 11, 5 and 7. Depending on the condition of the patient, the treatment, which ordinarily is continued for twenty-eight days, may be lengthened or shortened and the doses of the medicaments may be reduced. Some patients, particularly those with constipation, may be given magnesium preparations (magnesium oxide or a mixture of magnesium peroxide and magnesium oxide) instead of the aluminum hydroxide. The preparation of the belladonna leaves may eventually be replaced by the administration of atropine (0.5 mg. three times a day). The patient should be kept in bed during the entire duration of the treatment, and after it has been discontinued a light diet is advisable. The author states that the treatment was employed in 108 cases. He asserts that the results were favorable not only as regards the subjective symptoms but also in that the roentgenologic control revealed the disappearance of many ulcer niches. However, the reduction of the acidity was not quite satisfactory. The acidity values and the other symptoms of ulcer did not always run parallel; at any rate, the part played by the acidity in the genesis of ulcer and its symptoms is not entirely clear as yet.

Minerva Medica, Turin

2: 257-288 (Aug. 25) 1934

Endamoeba Histolytica and Acid Feces: Consideration on Parasitologic Diagnosis of Intestinal Amebiasis. P. Croveri.—p. 257.
*Some Obscure Points in Pathogenesis of Acute Pulmonary Edema: Part of Carotid Sinus in Its Mechanism. A. Salmon.—p. 261.
Experimental Research on Significance of Donaggio's Reaction in Urine. G. Ferro-Luzzi.—p. 268.
Atrophic Pigmentary Tuberculid: Case. V. Grillo.—p. 271.
Abscess Due to Chemical and Chemico-Active Fixation in Medical Practice. V. Gandini.—p. 274.

Carotid Sinus in Mechanism of Acute Pulmonary Edema.—Salmon states that in the area of bifurcation of the primary carotid artery, that is, in the sinus of the internal carotid, there is to be found in the adventitia a rich plexus of nerve fibers covering the carotid sinus itself. The fibers of this plexus meet in a small nerve described by Hering and designated as the nerve of the carotid sinus or Hering's nerve. Its fibers anastomose with those of the glossopharyngeal nerve and the vagus. The carotid plexus presents anatomic connections with the carotid gland situated in the same region. This gland, made up largely of a chromaffin substance, is considered by many anatomists an accessory chromaffin organ. Numerous fibers of the upper cervical ganglion pass to the intercarotid plexus. The region of Hering's "carotid sinus" is a center of special reflexes, in that pressure on the carotid region or its direct stimulation produces bradycardia and peripheral vasodilatation determining a marked lowering of arterial pressure. The center of these reflexes is the carotid sinus, which is anatomically and functionally connected with the bulbar nuclei. These reflexes may be abolished by destruction of the sinus and after resection of Hering's nerve, which is supposed to produce a depressive action on the arterial tension analogous to that of the depressor nerves of De Cyon-Ludwig. The carotid sinus is sensitive to mechanical stimuli, to increase of arterial pressure, to compression and shutting off of the carotid arteries and to chemical and thermic stimuli. The sinus is stimulated by epinephrine, strychnine, calcium chloride, caffeine, atropine, sparteine and other substances. The excitability of the sinus diminishes in suprarenal insufficiency. The author refers to the sympathetic-epinephrine or neurohormone theory of acute pulmonary edema. This theory, he believes, explains the relation of the condition to arterial hypertension. It does not explain why a hypersuprarenalemia of marked sympatheticotonic action causes acute pulmonary edema, conditioned by dilatation of the pulmonary vessels and presenting characteristic vagotonic symptoms. The author states that this point is made clear by invoking the part played by the carotid sinuses, which react to sympatheticotonic stimuli, particularly to epinephrine. Because of their intimate anatomic connections with the sympathetic nervous system, the bulbar nuclei, the vagus center, the respiratory center and the vasomotor nuclei, they give rise to vagotonic symptoms of bradycardia, fainting, polypnea and dilatation of the pulmonary vessels, the most characteristic symptoms of acute pulmonary edema. The author attributes an important part in the pathogenesis of acute pulmonary edema to the toxic factor (increase of potassium in the blood) and to the pulmonary factor.

Pediatria, Naples

42: 915-1034 (Aug. 1) 1934

*New Sensitive and Rapid Serum Reaction for Diagnosis of Leishmaniasis. L. Auricchio and A. Chieffi.—p. 915.
Whooping Cough and Its Roentgenologic Manifestations. F. Tecilazic. —p. 921.
Hormone Situation During Experimental Rickets. A. Cabitto.—p. 927.
Some Cases of Congenital Malformations of Hands and Feet. A. Zuppa. —p. 943.
Lumbar Spina Bifida with Solid Tumor. L. De Gaetano.—p. 967.
Malignant Granuloma: Two Cases. E. Pezza.—p. 981.

Serum Reaction for Diagnosis of Infantile Leishmaniasis.—Auricchio and Chieffi demonstrate that the blood serum of children suffering from leishmaniasis flocculates rapidly on addition of solutions of iron peptonate. They employed the following technic in six children presenting different stages of the disease. The blood is taken from the finger tip of the fasting patient. The amount of serum needed for the reaction is 0.2 cc., for which 0.1 cc. of blood is sufficient. The blood is collected with a pipet having a capillary point. The solution of iron peptonate must be freshly prepared. Three tubes are used. The serum to be examined is put in one tube; the same amount of serum from a normal child or from one affected by a disease other than leishmaniasis is put in another tube for control, and 1 cc. of the solution of iron peptonate at 1:600 is run in the three tubes. These are shaken and placed in a thermostat at 98.6 F. and observed every ten minutes for forty minutes. If the reaction is positive in the test tube containing the serum to be examined, the liquid becomes opalescent and flocculent and precipitates slowly to the bottom of the tube. No change is seen in the liquid of the control tube, the same limpid aspect persisting as in the tube containing only the solution of iron peptonate. Sometimes an opalescence may be observed, which is due to the distilled water of the solution. The reaction was positive in all cases of leishmaniasis. The serum reaction was constantly negative in ten normal individuals, in six patients having congenital syphilis, in eight presenting various clinical manifestations, in two with hemopathies and marked splenomegaly, in ten cases of malaria, in six of favism and two of typhoid, and in three patients presenting acute respiratory diseases.

Revista Médica del Rosario, Rosario de Santa Fe

24: 641-740 (July) 1934. Partial Index

Generalized Osteosarcomatosis: Case. M. Steinsleger and I. Slullitel. —p. 641.
Benign Spontaneous Pneumothorax: Case. D. Staffieri.—p. 660.
Clinical Evolution and Anatomic Verifications in a Patient with Wounded Heart. W. Tfjerina F.—p. 667.
Intrafunicular Injection of Hypophysin. N. Baravalle.—p. 677.
Habitual Abortion and Corpus Luteum. A. G. Neumann.—p. 682.
Poliomyelitis in Rosario: Last Epidemic in 1934. I. Slullitel.—p. 693.
*Descent of Vertebral Hypophonesis. E. S. Weiler.—p. 700.

New Sign of Pleural Effusion.—Weiler considers Koranyi's sign (hypophonesis of the dorsal segment on direct percussion of the apophysis of the dorsal vertebrae) of diagnostic value in pleural effusion. The mechanism of the sign is explained by the interposition of the pleura, filled with liquid, between the lateral and ventral aspects of the vertebrae and the lung. The sign may also be present without pleural effusion in bilateral hepatization of that portion of the lung adjacent to the dorsal vertebrae and in intrathoracic tumors, when they are in contact with the lateral and ventral aspects of the dorsal vertebrae. To differentiate the presence of pleural effusion from that of either intrathoracic tumors or bilateral hepatization of the lung, the author has determined the hypophonesis of the dorsal segment during the changes of position of the patient. The upper limit of the hypophonesis is verified by means of the direct percussion of the dorsal apophysis and then marked, first with the patient standing or sitting down (classic technic) and then with the patient in abdominal decubitus. In cases of pleural effusion the upper limits of the vertebral hypophonesis descends one, two or more interspinous spaces. The author calls the sign "descent of the vertebral hypophonesis." Its mechanism is explained by the mobilization of the intrapleural liquid, leaving the pleura between the lung and the dorsal and ventral aspects of the vertebrae more or less empty during abdominal decubitus. When the pleural effusion is not great and there is no hepatization of the lung, the vertebral column recovers its normal resonance along its whole length (positive hypophonetic disappearance). The absence of modifications of the vertebral resonance during the changes of position of the patient (negative hypophonetic descent) indicates an absence of pleural effusion. The sign is not equivalent to Grocco's triangular area and frequently shows itself without the existence of such an area.

Deutsche medizinische Wochenschrift, Leipzig

60: 1155-1190 (Aug. 3) 1934

Abuse of Soporifics. F. Flury.—p. 1155.
Eclamptic Uremia in Periarteritis Nodosa. C. A. Bau.—p. 1158.
*Diagnostic Use of Hemagglutination Reaction in Active Serum in Syphilis, Gonorrhea and Other Infections. W. Bachmann.—p. 1160.
Hay Fever as Leading Symptom of Allergic Disposition. E. Hanhart. —p. 1163.
*Early Diagnosis of Liver Diseases. F. Fischler.—p. 1167.
Relations Between Cell Metabolism and Growth. E. Bumm.—p. 1173.

Hemagglutination Reaction in Syphilis and Other Infections.—The correct interpretation of an accidental observation led Bachmann to evolve a suitable active method for the serologic demonstration of syphilis, which, like many other tests, is based on Bordet's complement fixation reaction. However, the positive outcome is indicated not by the simple inhibition of the hemolysis but by the agglutination of the sheep corpuscles. It was observed that, if sheep corpuscles in a 2.5 per cent suspension are mixed with concentrated or attenuated hemolysin (immune serum of a rabbit that has previously been treated with red corpuscles of sheep), the sheep corpuscles become agglutinated. If active serum of a syphilitic patient is mixed with attenuated antigen in the form of an alcoholic extract, placed in the incubator for from ten to twenty minutes and mixed with a 2.5 per cent suspension of sheep corpuscles, and if finally the hemolysin is added, a further incubation of thirty minutes duration leaves the hemagglutination in existence; while, if the same test is made with a negative active serum, lysis of the sheep corpuscles is observed. The technic of this hemagglutination reaction is as follows: Into each of three tubes are put 0.1 cc. of serum from the patient and 0.1 cc. of physiologic solution of sodium chloride and 0.2 cc. of diluted antigen in the proportions of 1:4, 1:5 and 1:6, respectively. Incubation lasting from fifteen to twenty minutes is followed by an addition of 0.2 cc. of a 2.5 per cent suspension of sheep corpuscles; finally 0.1 cc. of hemolysin, mixed 1:1 with physiologic solution of sodium chloride, is added. After thirty minutes of incubation the first reading is taken, to be followed by another reading from one to two hours later. A comparison of the results thus obtained in 982 tests revealed conformity between the inactive methods of the Wassermann reaction, the Meinicke turbidity reaction and the hemagglutination reaction in 90.7 per cent of the cases. The author emphasizes that the hemagglutination reaction is a valuable method for the serologic demonstration of syphilis, which has the advantage that the use of guinea-pig complement can be dispensed with and that it can be used in older serums (up to five days old). The reaction requires the previous examination of the hemolyzing or agglutinating immune serums for their suitability. He shows that the test can be used also for the serologic diagnosis of gonorrhea, typhoid and some cases of rhinoscleroma. He describes the technics for gonorrhea as well as for typhoid.

Early Diagnosis of Liver Diseases.—Fischler admits certain factors that make the diagnosis of liver diseases more difficult than the diagnosis of disorders of other organs, but he emphasizes that the negativistic attitude toward the early recognition of disorders of the liver is not justified. He shows that urobilinuria and urobilinogenuria are highly reliable and exact indicators for the existence of functional disturbances of the liver. Careful attention given to these symptoms for many years has convinced him that involvement of the liver in other disorders and disease of the liver itself are unusually frequent. He shows that, in the present status of knowledge, urobilinuria is still largely merely a symptom instead of a completely understood disease process. In answer to the question whether urobilinuria is always a sign of liver disease, he

points out that there is also a physiologic urobilinuria, and in explaining it he discusses the functions of the liver and the factors involved in these processes. He emphasizes that in the evaluation of urobilinuria the functional condition of the liver is of vital importance. Then he gives his attention to the pathologic urobilinurias. They are characterized by prolonged duration of the elimination of urobilin bodies, by a considerable height of the urobilin content and by the relative unresponsiveness to antiurobilinuric dietary measures. He takes up in detail the urobilinurias observed in febrile conditions, those caused by disturbances in the hematologic system, those accompanying diabetes mellitus, those caused by disturbances in the blood discharge from the liver and those occurring in cirrhosis of the liver, in disorders of the biliary system and in tumors of the liver. In the conclusion he states that he gave his attention primarily to the urobilinurias because he considers them the first and most important signs of a disturbance in the function of the liver. He does not wish to discredit the many other functional tests of the liver.

Klinische Wochenschrift, Berlin

13: 1105-1136 (Aug. 4) 1934

Serous Inflammation. H. Eppinger, J. Faltitschek, H. Kaunitz and H. Popper.—p. 1105.
Manometric Investigations on Metabolism and Growth of Bacteria Under Influence of Ultraviolet Radiation and Under Conditions of Inflammation. Ruth Lohmann.—p. 1112.
Synthetic Formation of Beta-Oxybutyric Acid and Aceto-Acetic Acid in Starving and Diabetic Organism. J. Monguió.—p. 1116.
*Infection and Toxic Edema. B. Busson and N. Kovacs.—p. 1120.
*Rôle of Reticulo-Endothelium in Formation of Fibrinogen. A. Held and C. H. Behr.—p. 1120.
*Insulin Destroying Power of Erythrocytes. F. Rosenthal, Ilse Friedheim and R. Nagel.—p. 1121.
Gallstone Formation as Result of Parenchymatous Hepatitis. G. Lemmel.—p. 1124.

Infection and Toxic Edema.—Busson and Kovacs point out that the failure to demonstrate toxins in certain infections that obviously exert a toxic effect has long been a problem of immunobiology. At present it is assumed that in these instances the toxins are not found within the bacteria or eliminated by the bacteria but are probably formed within the tissues under the influence of the invading micro-organism. Attempts have been made to explain on this basis certain actions of gas gangrene and of some streptococcic and staphylococcic infections. However, since the nature and the chemical composition of the toxins produced within the organism were still obscure, the studies of Eppinger deserved especial attention. That author proved the strong toxic action of the allylamine formates and of related substances on the organism, and their development from organic substances by the action of certain bacteria in the culture medium and their presence in pathologic processes. Moreover, it was possible to demonstrate an apparently specific toxic action of these substances following the destruction of tissues. In view of these observations it appeared logical to investigate what influence is exerted by such amines on the course of an infection. The authors made the following infection experiments with a hemolytic streptococcus strain and a hemolytic staphylococcus strain: They injected into a guinea-pig on the left side of the thorax 1 cc. of an eighteen hour bouillon culture of a hemolytic staphylococcus. An infiltrate developed at the site of injection but gradually disappeared again, and the animal did not die. However, if simultaneously with the bacterial culture 0.05 cc. of acrolein was injected on the right side of the thorax, the animal died within twenty-four hours. It was demonstrated by another experiment that this was due to a local action of the acrolein, to a promotion of the fixation and development of the infection by a localized impairment of the tissue in the form of a serous inflammation, of a toxic edema, and was not the result of a generalized damage by the reduction of the natural resistance of the animal. This experiment was carried out by injecting the acrolein not into the region immediately adjacent to the staphylococcic depot but distant from it, into the gluteal muscle. The result was that the animal remained alive. Experiments with a strain of hemolytic streptococcus produced the same results. The author calls especial attention to the fact that in the animals that died the heart blood contained no streptococci or staphylococci but that the pathogenic micro-organisms were present in great masses in the region of the toxic edema.

Rôle of Reticulo-Endothelium in Formation of Fibrinogen.—Held and Behr review several theories regarding the site of fibrinogen formation. They mention the liver, the bone marrow, a connection between leukocytosis and fibrinogen content, and finally the spleen and lymph nodes. These theories, most of which are well supported, can be brought into harmony by ascribing the capacity for fibrinogen formation either to all cells or to a type of cell that is present in all these different organs. The first assumption is justified only if localization fails. In regard to the second possibility, a former investigation supposed that the reticulo-endothelium is the common type of cell, since it may be assumed that the reticulo-endothelium has not only decomposing functions but also constructive ones. The authors point out in this connection that the formation of certain blood protein bodies (antibodies) is ascribed to the reticulo-endothelial system, that Bennhold demonstrated the close exchange relations between the blood protein bodies serving as "vehicles" and the reticulo-endothelial system, and that in anaphylactic shock there is a disappearance of fibrinogen and a functional arrest in the reticulo-endothelial system. On the basis of these considerations they decided to make storage experiments on the reticulo-endothelial system with a thorium dioxide preparation, with colloidal copper and with india ink. They describe the outcome and conclude that these experiments furnish the proof for their theory that the reticulo-endothelial system is the source of fibrinogen.

Insulin Destroying Power of Erythrocytes.—Rosenthal and his associates found in studies on erythrocyte suspensions, which were free from leukocytes and thrombocytes, that hemolyzed erythrocytes exert an inhibiting influence on insulin, while intact erythrocytes, under the same conditions, have no damaging effect on insulin. The insulin destroying power of the erythrocytes is due to an endoglobular principle, for the stromas washed free from hemoglobin have no influence on insulin, while a hemoglobin solution that is free from stromas is capable of arresting the action of insulin. The insulin destroying power of hemolyzed erythrocytes can be abolished by keeping them for one hour at 70 C. This thermolability indicates fermentative powers in the erythrocytes which may be identical with the peptide-splitting ferments that Abderhalden discovered in the erythrocytes. Whether the insulin destroying properties of the erythrocytes are of clinical importance for the phenomenon of insulin resistance and for the ferment economy of the erythrocytes will require further investigations.

Medizinische Klinik, Berlin

30: 1017-1048 (Aug. 3) 1934. Partial Index

Tuberculous Diseases of Eye and Their Significance for General Practitioner. W. Hoffmann.—p. 1017.
*Tuberculous Pulmonary Infiltrates and Carbohydrate Metabolism During Childhood. H. von Mettenheim.—p. 1020.
Practical Significance of Hormone Therapy in Gynecology. H. Buschbeck.—p. 1022.
*Prognostic Significance of Black Vomit as Complication of Surgical Infections. E. Melchior.—p. 1026.
Permanent Results of Madlener's Pylorectomy. F. Smoler.—p. 1027.
Dietary Prevention of Cancer. A. Lorand.—p. 1030.
Organs as "Peripheral Hearts" in Circulation. Hasebrock.—p. 1031.
Doubly Stained Sachs-Witebsky Reaction (Sachs-Witebsky-Hecht Reaction). H. Hecht.—p. 1033.

Tuberculous Pulmonary Infiltrates and Carbohydrate Metabolism in Childhood.—In studies on tuberculous children, von Mettenheim aimed to determine whether the regulation of the sympathetic nervous system is impaired in children with pulmonary tuberculosis, particularly whether the functional activity of the liver is changed. Dextrose tolerance tests were made on eighty-eight children between the ages of 4 months and 13 years. It was found that the blood sugar curves differ from those of normal children and that the various forms of tuberculosis have typical curves. These results are essentially identical with those obtained by Spiro in adults. This author pointed out that the curves greatly resemble those obtained in allergic diathesis. This in turn recalls the opinions of some investigators, who have pointed out that tuberculous infiltrations develop in children with sympathetic diathesis, who have an increased tendency to swell-

ing, a greater reaction capacity of the entire organism and an allergic disposition that may be due partly to a sensitization by repeated infections, and also a functional disturbance of the organs involved in the carbohydrate metabolism, particularly the liver. The majority (thirty-seven out of forty-six) of the children with tuberculous infiltrates, examined by von Mettenheim, presented aspects of exudative diathesis. Consequently he concludes that the blood sugar curves characteristic for certain tuberculous processes can be interpreted as an allergic phenomenon in children. This phenomenon manifests itself in a disturbance of the carbohydrate metabolism, particularly in the regulatory action of the liver. The existence of a functional disturbance of the liver was demonstrated by tolerance tests with levulose. The author gives a theory of the rôle of allergy in the development of the tuberculous process. He thinks, however, that studies on a larger material will be necessary in order to determine whether the course of the alimentary blood sugar curve can be used as an indicator for the type or the degree of activity of a tuberculous pulmonary process, or can serve as a diagnostic or a prognostic method.

Prognostic Significance of Black Vomit. — Melchior states that the significance of black vomit in surgical diseases was first stressed by Dieulafoy, who made his observations in cases of gangrenous appendicitis and pointed out that black vomit indicated an unfavorable prognosis for these cases. Erosions of the gastric mucosa, caused by necroses, form the anatomic substrate of the black vomit. The vomiting is occasionally extremely severe and quantities of from 300 to 400 cc. are eliminated. In weakened persons such hemorrhages may terminate fatally by causing suffocation. There is a relationship between black vomit and hemorrhages that have been observed after abdominal operations, particularly after those complicated by infections, but in recent years they seem to have become rare. However, they do seem to play a rather important part in peritonitis. If in these conditions the vomit is black and if rather large quantities are eliminated, the prognosis is unfavorable. The black vomit that is eliminated either spontaneously or by means of the stomach tube shortly after extensive interventions on the stomach should not be confused with the symptom of black vomit the author has in mind, for the former is temporary and has a favorable prognosis. The author calls attention to conditions of general sepsis, in which black vomit is a symptom. Here the prognosis is likewise unfavorable, for of the patients the author has observed only two recovered. He thinks that the symptom of black vomit has not been given sufficient attention in recent years, as some textbooks on surgical complications fail to mention it. He admits that, the before mentioned acute suffocation being rare, black vomit is usually not itself the cause of death. The fatal outcome is generally the result of the underlying disease, of which the vomiting of black blood is only a partial manifestation. The treatment can only be symptomatic, consisting of emptying the stomach, eventually by means of transnasal drainage, oral administration of fluid and care of the circulation.

Wiener klinische Wochenschrift, Vienna

47: 961-984 (Aug. 3) 1934

Diagnostic Significance of Intravenous Urography. K. Hutter.—p. 961.
Subleukemic Myelosis with Clinical Aspects of Pernicious Anemia. W. Beiglböck.—p. 962.
*Experiences with Löwenstein's Diphtheria Immunization Ointment. J. Siegl and Natalie Drach.—p. 965.
*Comparative Investigations on Complement in Gonorrheal and Rheumatic Disorders. J. Wendlberger and W. Volavsek.—p. 967.
What Can We Learn from American Neurosurgeons? B. Schlesinger. —p. 970.
Comparison Between Results of Direct Staining and Loewenstein's Culture Method in Examination of Secretions and Tissues. E. Jubés. —p. 976.

Experiences with Löwenstein's Immunization Ointment.—Siegl and Drach point out that the first immunization experiments with Löwenstein's diphtheria ointment produced comparatively favorable results. In the following years, Löwenstein tried to improve his ointment in order to better the results. The authors tried several of the modifications of the original ointment, but on the basis of the observations made with these they conclude that the hopes to improve the first results have not been realized, for the modified preparations produced poorer immunizatory effects than did the original one. The authors doubt the practical value of the method.

Comparative Investigations on Complement. — Wendlberger and Volavsek summarize their studies as follows: 1. The complement content of the blood of normal persons varies between 0.025 and 0.037 cc. 2. In some dermatoses the complement titer does not differ from the normal. 3. Patients with malaria, one patient with leukemia, one with psoriasis and several with syphilis showed noticeable deviations from the normal titer. 4. In gonorrheal arthritides the complement content is normal, and in this respect they differ greatly from the rheumatic arthritides. The authors will report later their studies on the cause of the fluctuations of the complement.

Zeitschrift für Tuberkulose, Leipzig

70: 385-456 (July) 1934

Constitutional and Pathologic Anatomy of Hematogenous Form of Pulmonary Tuberculosis. W. H. Stefko.—p. 385.
*Best Therapy of Pleural Exudates in Artificial Pneumothorax. P. Starcke.—p. 401.

Therapy of Pleural Exudates in Artificial Pneumothorax. — Starcke shows that according to some statistics pleural exudates are frequent in pneumothorax therapy, for of two statistics that he mentions one gives an incidence of 50 per cent and the other one of 68 per cent. He differentiates between sterile and infected exudates. The sterile exudates are of a rather benign character. The author thinks that their comparatively high incidence is due to the fact that the many small exudates of short duration, which frequently develop in the interval between two fillings, are generally counted into this group. Since this type of exudate develops as a rule immediately following a filling of the pneumothorax, the pulmonary collapse is probably responsible. The author shows that the former belief that the sudden and excessive stretching of the pleura is the cause is no longer tenable. He states that in the majority of these cases conservative measures, such as rest in bed and small doses of acetylsalicylic acid, will bring the desired results. The resorption of larger exudates may be promoted by moist packs and cutaneous irritants. Puncture is necessary only if the formation of exudate is rapid. Many of these exudates may be avoided by making the single fillings smaller and the intervals between them shorter. The added precaution of warming the pneumothorax air is unnecessary. He shows that the factors causing temporary exudates may also lead to the formation of chronic ones. Conservative measures and a single puncture are not sufficient in these cases. The prolonged existence of exudate and a lack of careful observation involve the danger of serious complications. The pressure may become too great, which is especially dangerous in cases of strandlike adhesions between lung and thoracic wall. In the roentgenogram the shadow of the exudate covers large portions of the lung and thus makes roentgenologic control impossible. In order to avoid tearing of adhering strands with consequent injury of the lung, and eventually an empyema with mixed infection, it is absolutely necessary to measure the intrathoracic pressure frequently. The author deplores that this pressure control is too often neglected. In case of a considerable excess pressure, it is of course necessary to withdraw a large part of the exudate and to replace it by a corresponding amount of air. Control of intrathoracic pressure is necessary also in order to avoid low pressure. A subnormal pressure must be counteracted by refilling with air. The author sees the greatest danger of the chronic exudates in the possibility that the pleural cavity may become rigid as a result of thickening of the pleura by the connective tissue formed from the fibrin deposited by the exudate. If this is the case, the pneumothorax must be maintained permanently or the rigid cavity must be removed by surgical intervention. The latter procedure is usually more difficult than is ordinarily assumed, for it may become necessary to remove portions of the thickened parietal pleura. In discussing the infected pneumothorax exudates, the author differentiates between purely tuberculous infections and mixed infections. He thinks that conservative measures should be tried first and that operative interventions should be postponed until the disease process has

reached a stage of rest. He describes the development of exudates with mixed infections and shows how they are frequently induced and how they may be prevented. He states that it is difficult to give general rules for the treatment but describes certain measures, such as drainage and thoracoplasty, and when and how they should be employed.

Zentralblatt für Gynäkologie, Leipzig

58: 1809-1872 (Aug. 4) 1934. Partial Index

Simple or Improved Speculum Examination. H. Hinselmann.—p. 1810.
*Reaction I of Anterior Lobe of Hypophysis and Its Differential Diagnostic Significance in Dead Extra-Uterine Pregnancy. W. Spitzer.—p. 1815.
*Experiences with Intravenous Continuous Drop Infusion in Cases of Sepsis. E. Kerner.—p. 1820.
*Activity of Trophoblast and Aschheim-Zondek Reaction in Extra-Uterine Pregnancy. E. M. Kaplun.—p. 1826.
Vaginal Total Extirpation in Intravenous Anesthesia with Aid of My Injection Apparatus and Arm Support. G. von Bud.—p. 1833.

Significance in Extra-Uterine Pregnancy of Reaction I of Anterior Lobe of Hypophysis.—Spitzer points out that in the pregnancy reaction of Aschheim-Zondek three degrees are differentiated: follicle maturation (I), hemorrhage into a more or less matured follicle (II), and luteinization (III). Pregnancy is indicated only when reactions II and III are demonstrable. Reaction I is not indicative of pregnancy, since an increased elimination of the follicle maturation hormone may be observed in other conditions. After discussing the significance of the Aschheim-Zondek reaction in extra-uterine pregnancy, the author points out that reaction I is a valuable diagnostic aid in cases of extra-uterine pregnancy in which the fetus has died, for it may still be positive from one and a half to two months after the death of the fetus. Since the diagnosis of abortion of a tubal pregnancy may present great difficulties, the biologic laboratory test may be the only reliable factor. The author relates the histories of three cases in which the follicle maturation reaction corroborated the assumption of death of an extra-uterine pregnancy. In view of the fact that the symptoms of the death of the fetus in a tubal pregnancy are frequently mistaken for those of inflammatory tumors of the adnexa, the author decided to study the outcome of the follicle maturation reaction in women with inflammatory changes in the adnexa. Five of thirty women gave a positive follicle maturation reaction, but, on repetition of the test, two of these five gave a negative one. From this observation the author concludes that biologic tests should always be repeated. He admits that the number of examined cases may not be large enough to permit a reliable estimate of the relations of the follicle maturation reaction to inflammations of the adnexa. However, the difference from the hormone production in tubal abortion is sufficiently great to make the reaction a valuable aid in the differential diagnosis. The author calls attention to the peculiar behavior of the rapid pregnancy reaction in rabbits. The rabbit test seems to be more suitable for the diagnosis of the retention of decidual tissues or of incomplete abortion than the mouse test. Consequently the author recommends that the mouse test as well as the rabbit test be made in doubtful cases of dead extra-uterine pregnancy.

Intravenous Continuous Drop Infusion in Sepsis.—Kerner states that in rather hopeless appearing cases of sepsis he obtained favorable results with intravenous continued drop infusion. He has employed it for a number of years in all septic processes in which the symptoms assume a threatening character from the beginning, and in puerperal sepsis without definite localization, particularly when chills develop. He administers either physiologic solution of sodium chloride or a solution of dextrose with an addition of a circulatory medicament that is a compound of epinephrine, ephetonin, strophanthin and a blood pressure active extract of the posterior lobe of the hypophysis. He admits that in sepsis it is difficult to estimate the efficacy of a therapeutic method, since many factors enter into the process and since the organism itself plays the decisive part, but he thinks that his method of continuous drop infusion has been of beneficial influence.

Aschheim-Zondek Reaction in Extra-Uterine Pregnancy.—Kaplun points out that in cases of extra-uterine pregnancy in which the ovum has died early conservative treatment is possible, provided there is a guaranty that the hemorrhage into the abdominal cavity will not be repeated. The risk of a hemorrhage is not eliminated until the embryo and the trophoblast have been destroyed. The trophoblast ceases functioning some time after the death of the embryo. If a method could be found that would disclose whether the trophoblast is active or inactive, it would be possible to determine when operative and when conservative treatment can be employed. In cases in which the trophoblast is active, treatment should be operative, because they involve the danger of internal hemorrhage; however, in cases in which the trophoblast has ceased its activity, conservative treatment can be tried. The author thought that the Aschheim-Zondek reaction might be helpful in determining the activity of the trophoblast, and he studied the relationship between the Aschheim-Zondek reaction and the activity of the trophoblast in twenty-one women with extra-uterine pregnancy. At first he tried to determine the activity of the trophoblast on the basis of its morphologic aspects. However, after he had studied the morphologic structure in cases of positive as well as negative Aschheim-Zondek reaction, he reached the conclusion that there is no parallelism between the morphologic activity of the trophoblast and the outcome of the Aschheim-Zondek reaction and that the function of the trophoblast and its morphologic structure do not harmonize. In the further course of his studies the author resorted to a different method. He implanted into infantile mice from 0.2 to 0.3 Gm. of chorionic or placental tissue, and after ninety-six or a hundred hours examined the ovaries of the animals for the hypophyseal hormone reaction, because active chorionic tissue contains hormones (follicle maturation hormone and luteinization hormone), while inactive tissue does not contain hormones and therefore cannot produce the characteristic reaction. The results of these implantation methods were compared with the outcome of the Aschheim-Zondek reaction in the urine. The author reports the results of these tests in eleven cases. He reaches the conclusion that the Aschheim-Zondek reaction cannot serve as an indicator of the activity or the inactivity of the trophoblast and that consequently it is unsuitable as a basis for the decision whether active or conservative treatment is advisable in extra-uterine pregnancy. The experiments are valuable also in connection with the question of the source of the luteinizing hormone, for Zondek believes that this hormone originates in the anterior hypophysis, while Philipp maintains that it is a product of pregnancy and is produced in the chorion and the placenta. After reviewing experiments carried out by Zondek, Philipp, Schockart, Siebke, Hofbauer and others, the author states that, without denying that the placenta produces luteinizing hormone, he believes that other glands, such as the anterior hypophysis and the pineal body and perhaps others, likewise produce the hormone during pregnancy. This would explain why luteinizing hormone is still present in the urine a long time after the removal of a hydatidiform mole or of a macerated fetus when a trophoblast is no longer present in the organism. It would also explain the lack of parallelism between the hormone content of placenta and urine.

Ugeskrift for Læger, Copenhagen

96: 845-864 (Aug. 2) 1934

*Chronic Acetphenetidin Intoxication. J. E. Holst.—p. 845.
Tuberculin Examinations in Julianehaab District, Greenland. L. Folke.—p. 847.
Congenital Lymphangioma: Case. B. R. Hansen.—p. 851.
Fibromyoma of Small Intestine: Two Cases. R. Malmros.—p. 853.
Chronic Mercury Intoxication Due to Dental Fillings. K. Steffensen.—p. 855.
Tannic Acid Treatment of Sunburn. E. Jensenius.—p. 858.

Chronic Acetphenetidin Intoxication.—In the case reported by Holst the patient had used acetphenetidin regularly for thirty years, as a rule in a daily dosage of 1.5 Gm., sometimes more. The anemia and cachexia, with epistaxis and hemorrhages in the skin after slight trauma, represented the picture of a chronic intoxication especially affecting the blood. The author says that although chronic acetphenetidin intoxications are rare, this instance together with cited cases of poisoning from other "headache powders" warn that the use of these medicaments should be controlled.